The Lettsomian Lectures
ON
DYSENTERY.

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LECTURE II. (PART II.)*

DIAGNOSIS OF AMŒBIC DYSENTERY.

IN the fourteenth century John Arderne wrote in London of the importance of a differential diagnosis between dysentery, hæmorrhoids, and cancer of the rectum, while his contemporary, John Mirfield, knew that dysenteric symptoms were not all due to the same cause. Five centuries later we learned that the differentiation between amœbic and bacillary dysentery, as also the distinction between true dysentery and diseases of the great intestine, such as cancer or the infiltration of Schistosomum hæmatobium, can only be made with accuracy when Entamœba histolytica has been searched for under the microscope. When amœbæ are found in fresh, warm stools, without contamination by urine, or when a fragment of mucus is placed on a warm slide, a pseudopodium may be seen to be protruding a new process, which makes it certain that you are not dealing with an epithelial or pus cell, or an air bubble or fat globule, or starch or proteid grains. If in a suspicious case amœbæ cannot be discovered, it may be worth while to pass a catheter into the rectum in order to examine the mucus which may become entangled in the eye of the instrument.

Rogers has rightly pointed out[6] that we are now furnished with an important practical help towards diagnosis by the discovery of the rapid curative action of emetine, because so far as we know at present this drug is only specific for amœbic dysentery. If the stools have not improved in number and character at the end of three days it is practically certain that the case in question is not one of pure amœbic dysentery. When in doubt as to the cause emetine may therefore be given as an aid to diagnosis, just as quinine has been used for many years to determine whether a fever is malarial or not. In Ceylon it is believed that many of the cases returned as dysentery in hospitals and dispensaries are really victims of ankylostomiasis. But the presence of the eggs of entozoa in the fæces should not preclude the possibility of a superinduced true dysentery, which may be amœbic or bacillary. Dr. Day lately informed me in Cairo that he had seen latent cases of bilharziasis of the rectum which became dysenteric when the host was invaded by amœbæ or bacilli; the rectal symptoms then yielded only to emetine or serum.

Lastly, it must not be forgotten that a patient may be suffering at the same time from the two chief types of dysentery. For instance, the returning pilgrims at El Tor, during the season 1910–11, showed a mixed infection of 90 cases out of a total of 328 dysentery admissions to the hospital. Rogers has recently analysed the most frequent errors of diagnosis in 1000 post-mortem examinations of medical patients in Calcutta.[7] He finds that the clinical diagnosis of amœbic dysentery has been misnamed tubercular or simple diarrhœa or peritonitis, while there have been single cases which were thought to be the following: Tubercular peritonitis, hepatitis, gangrene of rectum, intestinal obstruction, broncho-pneumonia, malaria fever, and anæmia.

TREATMENT.

There is an old superstition that nature ordains that an antidote to the ills of man shall be provided in close proximity to the source of evil. Those of us who in tender years learned this comforting doctrine from the nurses who pointed out the dock leaves growing not far from the stinging nettle may accept without surprise the fact that tropical South America provides for us Peruvian bark and Brazilian ipecacuanha, genera of the Rubiaceæ, and our chief armament in combating the two most widely spread tropical diseases, malaria, and amœbic dysentery.

Ipecacuanha.

Ipecacuanha is the root of Psychotria ipecacuanha, a small plant found in most parts of Brazil; this is known as Brazilian or Rio ipecacuanha, and is the only kind official in the British Pharmacopœia. Another variety imported from Colombia is known as Cartagena ipecacuanha; this is not official, though the United States Pharmacopœia admits both varieties. The term "ipecacuanha," derived from the language of the aborigines of Brazil, has been applied to a great number of emetic roots of South American origin. In an account of Brazil written by a Portuguese friar and published by Purchas in 1625 mention is made of three remedies for bloody flux, one of which is called igpecaya. In their work on the natural history of Brazil published at Amsterdam in 1648 Piso and Marcgraf described two plants to which the name was applied; one of these is now known to be the genuine ipecacuanha. The drug was in common use in Brazil at this time, but was not brought to Europe until 1672, when a traveller brought a quantity of the root to Paris. In 1680 a Parisian merchant became possessed of 150 lb. of the drug; it was largely prescribed by Helvetius, a Dutch physician practising in Paris, who kept its nature secret. The fame of the cures reaching the French Court, King Louis XIV. caused trials to be made, and as these were successful he accorded to Helvetius the sole right to sell the remedy. In 1688 the French Government purchased the secret from Helvetius for £800, and made the nature of the remedy public. The botanical source of ipecacuanha was not finally settled until 1800, when Dr. Gomez of the Portuguese Navy brought authentic specimens to Lisbon. As the remedy increased in demand numerous substitutes resembling the true drug came into use; in 1872 Professor Balfour enumerated 15 emetic roots used in various parts of the world and agreeing, to a certain extent, in being more or less annulated or striated externally. The destructive methods of collection employed in Brazil and the slow growth of the plant were responsible for a considerable scarcity of the drug, and numerous attempts have been made to cultivate ipecacuanha in India, Ceylon, and other tropical countries; a considerable quantity of a good quality of the drug is now exported from Singapore.

Supersession and Reintroduction of Ipecacuanha.

As an expectorant and emetic ipecacuanha held its own in Europe and India, but it soon ceased to

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be regarded as a specific for dysentery and was superseded for years by calomel and opium. In 1858, Surgeon-Major E. S. Docker again introduced large doses of ipecacuanha (20–90 grains) after opium, and only lost 1 out of 50 cases among British troops in Mauritius. As the consequence of its reintroduction into India the death-rate from dysentery in Madras fell from 71 to 13·5 per 1000, while in Bengal it was reduced from 88·2 to 28·8 per 1000. Fayrer states that nearly 11 per cent. of the cases among British soldiers used to be fatal, yet Docker had to wait until 1880 before he received any recognition of the important services he had rendered to mankind, when a gratuity of £400 was given him.[8] His treatment was found vastly more useful than the previous methods of bleeding, blisters, and mercury.

Forty years ago we were taught by Murchison that all cases of dysentery should be treated by one or two doses of ipecacuanha with an initial dose of laudanum and the application of a mustard leaf to the epigastrium, but when I was confronted with dysentery in Servia, Turkey, Egypt, and South Africa I failed to find that this remedy was a universal cure, and for some years almost entirely abandoned the use of ipecacuanha, putting my faith in the saline treatment, or in bismuth, tannigen, and tannic acid, with large enemata of nitrate of silver, sulphate of copper, or quinine.

I think it is now obvious that my failures, which were also experienced by many good clinicians in India and other tropical countries, were chiefly due to two facts: (1) we knew but little of the various types of dysentery, and when we met with no success or with very partial success we blamed the ipecacuanha, instead of discovering that we were very often aiming at bacilli with a weapon which we now know is only warranted to kill amœbæ; (2) we were taught to administer ipecacuanha in single doses, repeating it if it was vomited by the patient, and occasionally giving a third dose if necessary, but it was not the fashion to prolong the use of the drug. It hardly occurred to us to imagine that if slight temporary benefit occurred after one nauseous bolus, a permanent cure might be attained by continuing the remedy. Perhaps we should have been more persistent in our trials if we had had more faith in the wholly empirical remedy. The utmost that ardent supporters of the drug could tell us was that it was supposed to act on the liver and that extra bile was perhaps poured out to kill the unknown organism of dysentery and heal its ravages.

Thus ipecacuanha was again temporarily shelved in many dysentery countries until the use of it was revived by Sir P. Manson. When I first had the opportunity of seeing him prescribe it for amœbic cases by his own prolonged method, a dozen years ago, I confess to having felt very sceptical about its value. But I was at once impressed by observing that the house physicians, assistants, and nurses were all firm believers in the method and preferred it to other lines of treatment. Gradually, as amœbæ came more and more to the etiological front the scales fell from my eyes and I adopted the well-thought-out course of administration.

The patient is starved for four hours, say from 5 P.M.; at 8.45 P.M. a mustard plaster is applied to the epigastrium, the pillows are removed from beneath the patient's head, and 15 minims of laudanum in water are given to him. At 9 P.M. he has one dose of 30 grains of ipecacuanha, and to prevent vomiting he is kept absolutely at rest, the nurse being ordered to wipe his lips to prevent his even swallowing saliva for at least three hours, when he is allowed a small drink. The next night, with similar precautions, he is given 25 grains of the drug, preceded by 10 drops of laudanum. On the third night he takes 20 grains after 5 drops of laudanum. After this opium is no longer required and the ipecacuanha is gradually reduced to 5 grains and kept there till the course has lasted a fortnight, when the patient will have taken altogether 145 grains. The patients submit willingly to possible vomiting and rigid rest and make up by day for rather sleepless nights. The only improvement I have added to this method is that I give the drug in five-grain membroids or stearin-coated pills, which prevent absorption in the stomach.[9] Care must be taken that the capsules are not too well coated, for I once found an undigested membroid in the patient's fæces.

The Alkaloids of Ipecacuanha.

Pelletier in 1817 separated from ipecacuanha what he regarded as the emetic principle; this was named emetine.[10] His examination of the various American emetic roots in commerce showed important variations in their alkaloidal content. In 1894 and 1895 Dr. B. H. Paul and Mr. A. J. Cownley showed conclusively that the substance hitherto known as emetine was a mixture of several distinct bases; for one of these bases, itself uncrystallisable, but forming crystallisable salts, they retained the name emetine; the second base, which also formed crystallisable salts, they named cephaëline (the ipecacuanha plant was then known as Cephaëlis ipecacuanha). Traces of a third alkaloid were found, and this was afterwards named psychotrine.

The many varieties and substitutes for ipecacuanha were factors in themselves sufficient to militate against its successful use in dysentery; a further disadvantage was the emetic and depressant action of large doses. In 1890 Surgeon-Major Harris, of Simla, pointed out in a letter to THE LANCET[11] that de-emetinised ipecacuanha—meaning ipecacuanha freed from all its alkaloids—answered as well as ordinary ipecacuanha in the treatment of dysentery. Other investigators were unable to confirm this, and Bird showed in 1893 that some specimens of so-called ipecacuanha sine emetine contained up to 1·2 per cent. of alkaloid, whilst in other specimens the therapeutic value seemed proportional to the amount of alcohol-soluble extractive present, alkaloids being absent. Bird, and later Paul and Cownley, put in hand an examination of the non-alkaloidal extractive. It was found to have no emetic action in doses of 4–5 grains, but positive indications of any therapeutic activity appear not to have been obtained. Recently Finnemore has taken up the subject, but the results of any pharmacological investigations have not yet been recorded.

Official ipecacuanha root of good quality contains 2–3 per cent. of total alkaloids, of which emetine constitutes about 72 per cent., cephaëline 26 per cent., and psychotrine 2 per cent. In Cartagena ipecacuanha the emetine amounts only to about 40 per cent. of the total alkaloid, whilst the cephaëline reaches as much as 57 per cent. On account of the different proportion of the respective alkaloids, Cartagena ipecacuanha is excluded from the British Pharmacopœia. Of the two principal alkaloids cephaëline is regarded as the more active emetic but the less active expectorant. Chemically emetine is methyl-cephaëline, $C_{29}H_{40}O_4N_2$; Carr and Pyman

have recently shown that psychotrine can be converted into cephaëline by reduction; a chemical relation between the three alkaloids is therefore established.[12] Several crystalline salts of the three alkaloids have been prepared and characterised.

Treatment by Emetine.

The use of ipecacuanha in dysentery was placed upon a scientific foundation by the observation of Vedder in 1910 that solutions of emetine, 1 in 100,000, have the power of destroying amœbæ of the A. limax type in broth culture.[13] Rogers confirmed this effect of emetine hydrochloride on Entamœba histolytica in dysenteric stools.

So early as 1829 emetine was employed with good effect by Bardsley, and again in 1890 Lieutenant-Colonel J. H. T. Walsh[14] administered it in dysentery with marked success. To Sir Leonard Rogers[6] our gratitude is due for his introduction of treatment by what is usually called the intramuscular, or, more accurately, the intracellular method. Like quinine the dose should *not* be administered immediately under the skin, for by this method, as usually recommended, painful lumps and bruises may occur. It is not necessary to insert the needle into the body of a muscle. The hydrochloride of emetine in sterile water is the most practical to use, and it may be injected three inches under the clavicle or elsewhere. I have never met with nausea or any other inconvenience except that there is very slight tenderness at the site on the day following the injection, and a few women have complained of slight muscular pain after a fortnight's course. An ordinary case requires half a grain of the salt morning and evening on the first day, after which the dose may soon be reduced to half a grain once a day; the reduction of the dose must be decided by the improvement in the patient and the stools. As no one yet knows for how long the treatment should be continued, and as I have seen several cases in London which had previously undergone a three days' treatment (without bismuth) in India, I have provisionally formed for myself the habit of giving daily injections for a week, and then injections on alternate days for a second week, and so far I have not met with any case which has relapsed after such dosage. By this routine method an ordinary case would get altogether about 6 grains, equivalent to 540 grains of ipecacuanha. In a gangrenous or critical case I should not hesitate to give ½-grain, or even 1-grain, doses every four hours, if necessary. Emetine, when keratin-coated, may be given by the mouth at bedtime, but is liable to cause vomiting unless the ipecacuanha precautions are observed; it is not so rapid in its action as by the intracellular method.

As I have as yet had no experience of treating children with emetine, I may draw attention to two cases reported by Captain R. G. Archibald[15] from Khartum. One English girl, aged 2½, passing 23 motions in the 24 hours, received injections of ¼ grain, which, spread over three weeks, amounted to a total of 2¼ grains. Her sister, aged 8 months, passing six motions, only required four doses, each of 1/12th grain, to get rid of all entamœbæ and symptoms. It is probable that children, as with ipecacuanha, will be found to be very tolerant of emetine. Captain Archibald, probably very wisely, recommends that emetine should be continually administered once a week or once a fortnight for a period of at least three months after the apparent cure of the patient.

When all symptoms have yielded to emetine and yet cysts reappear from time to time in the fæces, it is possible that ipecacuanha by mouth may succeed in banishing them more easily than a return to emetine injections. In support of this suggestion I may mention that a medical man from India consulted me lately about himself. He had undergone emetine treatment for dysentery in India, and had no symptoms except that he voided a little mucus, which contained hundreds of the so-called "minuta" cysts. He then injected himself every two or three days for two months with ½ grain of emetine. The cysts persisted, but disappeared after ipecacuanha treatment by mouth.

Rogers has published some experiments carried out to determine the fatal dose of emetine hydrochloride; rabbits and monkeys were used, and, if we are to assume that man would be proportionately affected, he finds that the lethal dose for a man weighing 11 stones would be 15 grains intracellularly or 5 grains intravenously.[16]

There has been so great a demand for emetine during the last two years that its price has more than doubled, and in consequence a cheaper alternative has been put on the market, called "amebetine," which consists of the three known alkaloids of ipecacuanha unseparated from each other. I have tried it in a few mild cases with good results and without causing vomiting.

Emetine would seem not to have a cumulative effect in the system, for a medical man who had contracted dysentery abroad, and who consulted me last year, was so pleased with the effect of the drug on himself that he continued intracellular injections, each of ½ grain, every night for three weeks, and then every other night for another three weeks, which makes more than 15 grains altogether. His last six injections were of amebetine. On coming to tell me of this protracted treatment, he said that he had never noticed nausea or any other discomfort. His appetite had steadily improved, his motions became of a darker brown colour, but still sometimes contained a little mucus.

Whether we employ emetine or amebetine, or whether any better derivative of ipecacuanha can be discovered in the future, we seem to-day to possess a chemical agent which can eventually destroy pathogenic amœbæ, not only in the laboratory, but also in the tissues and fluids of the living body. After 240 years of empirical use of ipecacuanha we can now dignify this drug as being parasitotropic for amœbic dysentery, and, what is better still, as monotropic, in Ehrlich's language—i.e., possessing a specific affinity for the protoplasm of the offending amœbæ, and yet being inert with respect to all the other constituents of the normal body.

During my recent visit to Ceylon I met an intelligent young English planter without medical training. He told me that he used to lose from dysentery about 40 imported Indian coolies every year in the labour force of 600 on his tea estate. He heard of emetine in 1913 and sent for some. He then treated all his cases of dysentery with the new drug, and during the following six months which comprised the dysenteric season he never lost a case. Dysentery is rife in all parts of Ceylon, and in 1911–12, 4576 cases were treated in the various Government hospitals, with 1665 deaths. One-fifth of the cases were treated in the Colombo hospital among vagrants and those whose drinking water comes from shallow unprotected wells. In the planting districts the disease is associated with an

indifferent water-supply, but many patients under treatment for dysentery are really suffering from ankylostomiasis. Dysentery and diarrhœa are also the commonest diseases among Ceylon prisoners, for in the same year 2445 cases, with 125 deaths, were treated in the jail hospitals, including 758 cases, with 57 deaths, in Colombo.

Notes of Cases.

Many cases which come to us in private or at the hospital have, of course, been treated with all care and skill. Others have had no such fortune, and I should like to give the notes of a case to show how dysentery ought *not* to be treated, always remembering that the patient's own history of his case may not be strictly accurate.

CASE 3.—The patient, aged 27, an English baggage steward, was admitted into the Albert Dock Hospital in 1907. He stated that his dysentery had begun on leaving Penang for London, with 25 motions a day, blood, mucus, and tenesmus. He was immediately treated by the ship's doctor, who gave him a powder three times a day and a white mixture, followed by opium pills. During this voyage he was not kept in bed and was given ordinary food, and no ipecacuanha. On arrival in London he was still very ill and had 10 motions daily. He was then treated at his home in the country by a doctor for three weeks, who told him that no special diet was needed, but gave him a mixture and apparently thought lightly of the case, for he never inspected the fæces, though all details of the history had been supplied to him. The patient then left this doctor and dieted himself on light food, resting a great deal, though not actually in bed all day. This improved him so much that he went to sea again, though he still had three dysenteric stools daily. On the voyage out the ship's doctor gave him a mixture and powders, but never saw his stools nor prescribed rest nor special diet. When he reached Bombay he was much worse and had to be transhipped home. He thus came under a fourth doctor, who did his best to diet him but did not keep him in bed and never examined his fæces. On his return to London he had 18 stools per day and was sent to the hospital, where he was put to bed on a diet of milk and barley water. He was then given the ordinary routine ipecacuanha treatment, with the result that after the first day the myriads of amœbæ were reduced to a few and after the third day none could be found. Tenderness over the colon and tenesmus disappeared, and he said he felt better than he had for months. On the third day in hospital he had only one stool, and this continued until he left the hospital, without blood or mucus and having increased in weight.

I am grieved to say that some ships' surgeons are to-day not supplied with emetine, which seems to me criminal carelessness.

I began to substitute emetine for ipecacuanha in the autumn of 1912, and have used it since in every case in which amœbæ could be found, and in a few others where none could be discovered. With the exception of Case 12, I have met with universal success. I will not lengthen this paper by detailing every instance, but I will give very briefly the account of six consecutive cases of amœbic dysentery treated at the hospital in the summer of 1913.

CASE 4.—The patient, a Goanese, aged 38, contracted dysentery in Baltimore four months before admission. His five typical stools per day contained Entamœba histolytica and cysts. He was given eight injections of hydrochloride of emetine gr. ¼, followed by four injections of gr. ½. No amœbæ were found after the fifth day of treatment, and the motions were reduced to three and after the sixth day to one per diem.

CASE 5.—The patient, aged 37, a Lascar, had had incessant diarrhœa for two weeks, 12 typical stools daily containing amœbæ. I gave him five daily injections of amebetine gr. ½, which reduced the number of motions to six, and the amœbæ could not be found on the second and succeeding days. The drug was stopped for three days, because he had an intercurrent attack of broncho-pneumonia; then he was given santonin to expel his round worms, and then he returned to amebetine, of which he had eight more daily injections of gr. ½. This reduced the number of evacuations to one daily.

CASE 6.—The patient, aged 27, an Englishman, from the tropics, gave a history of seven weeks' "diarrhœa," and had never been treated for dysentery. His motions contained amœbæ, mucus, and sometimes blood; they were watery and three or four in number per day. He had 15 daily injections of emetine gr. ½, but from the fourth day of his stay in hospital amœbæ disappeared and he had a tendency to constipation.

CASE 7.—The patient, aged 46, an Englishman, had in Southern India three attacks of dysentery between 1907 and 1913, for one of which he was treated with ipecacuanha. On admission he complained of a dragging pain above the umbilicus, where there was slight tenderness on pressure, and mucus in fæces, but there was no blood and the bowels only acted once a day. Amœbic cysts were found and he was at once put upon injections of emetine gr. ½, which were continued for 12 days. There was no trace of intestinal tenderness or amœbæ after the sixth day, but mucus occasionally appeared in the fæces for two months. Before he returned to India he was given amebetine gr. ½ every night for a week, because his liver was slightly enlarged and tender on deep inspiration. He gained 8¼ lb. in weight and stated that he felt quite well for the first time for 6½ years.

CASE 8.—The patient, a Japanese, aged 47, infected probably at Penang or Yokohama, had had four weeks' "diarrhœa" before admission with abdominal pain. There were 12 stools a day, consisting of almost pure blood and mucus, while the microscope revealed amœbæ free and encysted, with ova of Heterophyes heterophyes. Emetine gr. ½ increased to gr. ½ daily, until gr. 8 had been given, reduced his motions from 12 to 2 daily and they became normal in appearance. He was in hospital for 25 days and voided after treatment 50 adult heterophyes worms.

CASE 9.—The patient, aged 31, an Englishman, was attacked by dysentery and treated with ipecacuanha 11 years ago, but has spent the last seven years in England, occasionally having slight reminders of the disease. On admission he was found to have daily six stools, which were dark brown, watery, and offensive, and contained mucus, but no blood. Amœbæ in large numbers, free and encysted, were seen. The amœbæ disappeared on the fifth day of emetine injections, and there was only one daily evacuation.

During the same months cases which were clinically dysentery, but in whose fæces amœbæ could not be found by repeated examinations, were also treated with apparent success by emetine. I give two typical cases of this series which were not complicated, as coloured patients so often are, by the presence of entozoa.

CASE 10.—The patient, aged 28, an Englishman, suffered eight years before from dysentery, and had a return of it 11 weeks ago, after leaving Australia, and rapidly lost 14 lb. weight. He had on admission seven motions a day, watery with undigested food, mucus, and blood, but no amœbæ could be found. After nine injections of emetine gr. ½, he had only one motion a day, formed and without blood or mucus.

CASE 11.—The patient, aged 25, an Englishman, had suffered from dysentery three years since and one year ago, but has been in England for the last 18 months. He had never been treated with ipecacuanha. On admission he had 12 motions daily, dark brown, offensive, watery with undigested food and mucus, but no blood and no amœbæ. During eight injections of emetine gr ½, his motions became constipated and without mucus.

Among private patients I have treated a dozen cases, mostly from India, in whose fæces Dr. G. C. Low had discovered amœbæ, besides an equal number seen in consultation. Two of them were ladies who were suffering from habitual constipation. They all became apparently well after a

course of emetine, the amœbæ vanished, and in none of them have I been able to hear of any relapse. One case was complicated by appendicitis, and an operation had to be performed directly the course of emetine was over. All patients state that after emetine treatment they have lost, among other things, an indefinite feeling of discomfort in the abdomen, which they find it difficult to describe.

In order to show that emetine is not universally successful in saving the lives of amœbic dysentery patients, I take this opportunity of reporting my one fatal case after 18 months' experience of the drug. It is quite possible that I ought to have given it in larger doses on this occasion.

CASE 12.—The patient, aged 26, a Japanese fireman, was admitted to hospital on Nov. 11th, 1913, with a three weeks' history of dysentery contracted in Bombay. His tongue was moist and covered with a creamy white fur, and he complained of pain and tenderness on the left side of the abdomen. He had 15 motions, containing blood, mucus, and amœbæ on the first day, and 19 motions on the second and third days after castor oil had been administered. On arrival he was at once given emetine injections gr. ½, night and morning, which were increased to gr. ¾ six days later. His absence of knee-jerks and abnormal cardiac sounds made me fear that dysentery had supervened upon latent beri-beri. His fæces contained eggs of Trichocephalus dispar and Heterophyes heterophyes. Emetine reduced his temperature from 100° to 99°, and his evacuations from 15 to 8, but he gradually became more sleepless and exhausted, and died on Nov. 23rd in spite of bismuth, morphia, brandy, strychnia, and ether. His differential count on admission showed lymphocytes 25, large mononuclears 29, polymorphonuclears 46 per cent. At the post-mortem examination by Dr. Newham on the following day the body was generally emaciated, there were œdema of lungs, evidence of old pleurisy on the left side and congested peritoneum, while in the small intestine there were 2000 Heterophyes heterophyes worms, mostly in the jejunum. Upon them Dr. Leiper reported: "They are identical with the Egyptian form, and tally with the classical description by Professor Looss save in one point; the yolk glands are not confined to the lateral aspects of the worm, but clumps are seen at irregular intervals in the central portion among the coils of the uterus." There were almost no dysenteric ulcers above the ileo-cæcal valve, but they were very numerous throughout the large intestine and extended down to the transverse muscular coat; the mucous membrane between the ulcers was greatly swollen, hyperæmic and undermined; in places the wall of the bowel looked healthy, in others it was of a slate colour. The liver weighed 64 oz. and was of a pale colour, of normal consistence and friability, but in the right lobe, 1 inch from the under surface, there was an abscess, about the size of a walnut, containing yellow material, tinged here and there with red. The spleen was triangular in shape and small, weighing only 2½ oz. All other organs were normal.

I should add that there was no evidence in this case of complication by bacillary dysentery, and Dr. Wenyon could find no amœbæ in sections of the large intestine, showing, therefore, that emetine had killed them. The whole of this large intestine is here for inspection.

Value of Bismuth.

For 30 years I have been a believer in the empirical use of bismuth (subnitrate or salicylate) during and after the special anti-dysentery treatment, and I still continue to use it as an attendant on emetine. I have found doses of 15 to 60 grains every four hours sufficient for an adult, and have tried to avoid constipation by giving a saline mixture once or twice a week. Dr. W. E. Deeks in Panama for the last six years has successfully adopted the plan of dosing patients by the teaspoon (about 3 drachms of bismuth subnitrate) every three or four hours. It was thought at one time that bismuth acted as a direct poison to entamœbæ, because they were found to disappear not only when lying free in the great intestine, but also when buried in the bowel wall. But Dr. S. T. Darling negatived this by culturing free-living amœbæ on media sown with bismuth.

Dr. W. M. James,[17] of Ancon, states that entamœbæ are very seldom met with in the stools after the second day of bismuth treatment, though he once saw them in great numbers on the seventh day. He thinks it quite probable that the action of the hydrogen sulphide of the bowel on the subnitrate may deprive the entamœbæ of an essential element of their food-supply. My own belief in bismuth as a secondary drug has increased since the introduction of emetine, because I notice that the cases of relapse after a few days of emetine which I have seen and read of are those which have not also had the benefit of a course of bismuth. Dr. James finds that if amœbæ are kept for one or two hours in a moist chamber before being fixed and stained certain degeneration forms appear, characterised by disappearance of the nuclear network and collection of the chromatin into large blocks against the nuclear membrane with loss of staining of the karyosome. In patients treated with bismuth subnitrate similar degenerative changes are observed in amœbæ fixed and stained immediately after their passage from the body.

In our present state of knowledge, and until it has been proved that emetine alone will banish the infection for all time, I agree with Dr. James in recommending "the simultaneous employment of bismuth subnitrate in large doses because of the difference of action of the two drugs against the entamœbæ. If there be any emetine-immune entamœbæ resulting from the employment of the alkaloid the bismuth subnitrate will effectually deal with them, and very possibly the latter drug will materially aid in the effectiveness of the emetine, just as mercury must also be employed with salvarsan in the successful treatment of syphilis, even though the action of bismuth is not that of a direct poison, as is the action of mercury."

The general treatment is the same for amœbic and bacillary dysentery, so I will postpone it to the next lecture.

COMPLICATIONS.

The chief complication of amœbic dysentery is abscess of the liver following hepatitis, and it is very much to be hoped that a universal and sufficiently prolonged treatment of dysentery by emetine will eventually lead to an enormous reduction of this complication, which succeeds dysentery, according to various statistics, in from 11 to 33 per cent. of hospital cases. Formerly we used to be thankful if we could put an end to dysenteric symptoms by any treatment, and we then seemed powerless to prevent any extension of amœbæ to the liver in our convalescent patients. Now that we know that emetine kills amœbæ we must be careful that our use of it is sufficiently prolonged to destroy not only the amœbæ in the intestine, but also those which have already been transported by the blood stream to liver or lung. In spite of the fact that I have seen Muhammedan patients who vowed that they had never had any use for alcohol, I still think that free libations play an important part, at least in Europeans, in the etiology of liver abscess. The well-known rarity of the complication among women may be partly explained by their smaller consumption of alcohol, and I have noticed on the very rare occasions when

a European woman has suffered from it that she has been endowed with a typical masculine thirst.

Amœbic abscess of brain and spleen are met with occasionally in Egypt. Abscess of the lower lobe of the right lung may occur, and is not always recognised until it is encountered at the necropsy, when the diaphragm is found to be adherent to the liver and pleura. Local peritonitis may result from extension of the bowel ulceration, especially in gangrenous cases, but this is very difficult to diagnose during life. General peritonitis may follow the bursting of a liver abscess or a large perforation of the intestine, which usually occurs in the cæcum and is always fatal. Dr. R. P. Strong[18] found perforation 19 times in 100 fatal cases, but in 200 of his clinical cases it only occurred three times. Appendicitis, intestinal hæmorrhage, and sprue (in tropical countries) must be mentioned among rare complications, with arthritis as a sequela.

THE DANGER OF CARRIERS.

The importance of this question in every country has already been referred to while discussing amœbæ, but other papers on the subject have been published since I began writing this lecture. Dr. C. Mathis, for instance, found in Tonkin that 8 per cent. of a limited number of natives examined were acting as healthy carriers of Entamœba histolytica. He believes that direct human contagion is as important in the spread of the disease as the indirect infection by food and water, and quotes in favour of this view the absence of dysentery among troops in barracks and its sudden appearance under the more crowded conditions of camp life, as also the frequent attacks among doctors and nurses.[19]

Professor Landouzy has drawn attention to the occurrence of amœbic dysentery in 14 individuals who have never left France, and suggests that there is a gradual acclimatisation of this disease in that country. His record shows that there have been 7 liver abscesses and 5 deaths. Four of the victims had been directly associated with colonials who had returned from the tropics, but the others apparently had not. He suggests that amœbæ should be searched for in all cases of rebellious diarrhœa of unexplained orgin, even though there may be no blood in the stools. He insists that returned colonials who have attacks of dysentery must no longer be regarded as incapable of spreading the disease.[20]

Dr. E. B. Vedder considers that the presence of a considerable number of these chronic amœba carriers constitutes a sanitary menace to the community, and thinks it possible that they may be rid of their amœbæ by a course of enemata of quinine or silver nitrate[13] when emetine proves insufficient.

Lastly, Dr. S. T. Darling, in reporting a case of entamœbic colitis naturally acquired in a dog, reminds us that we should bear in mind the possibility of dogs and cats acting as carriers of amœbic dysentery.[21]

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STERILISATION OF WATER-SUPPLIES FOR TROOPS ON ACTIVE SERVICE.

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SOME years ago, whilst working at the sterilisation of the Cambridge water-supply, I found that it was not necessary to make a bacteriological examination in order to determine whether the bacillus coli group had been killed by the addition of certain quantities of bleaching powder (chloride of lime) to the water under observation. Working with very dilute solutions of bleaching powder I found that the amount of "available" chlorine required to be added to the Cambridge water to "sterilise" it was frequently only about 1 part in 7,000,000. In such cases the number of bacteria present was very small and the amount of organic matter very low, and I found, even after the addition of the above small quantity, that if, a quarter of an hour after the addition of the chloride of lime, I obtained a blue or a violet-blue reaction with iodide of potassium and starch, as much as a litre and a half or even two litres of the treated water did not contain a single "living" bacillus coli communis. In some earlier experiments I was able to demonstrate that the typhoid and cholera bacilli were perhaps even less resistant to the action of hypochlorous acid than was the bacillus coli communis, and I now realised that water to which bleaching powder had been added and which at the end of a quarter of an hour gave the above blue reaction could contain no living members of the bacillus coli communis group, the dysentery bacillus, or any of the pathogenetic organisms mentioned capable of development in bile salt broth or on special media. I suggested, therefore, that this chemical test might be utilised to take the place of a bacteriological examination wherever waters, varying from time to time in their bacterial contents or in the amount of organic matter contained in them, were being treated with bleaching powder as a sterilising agent, this test taking a few seconds only, against the 24 to 96 hours required for a bacteriological examination.

Carrying out a further series of experiments and following the lines laid down, first in this country and then more completely worked out in America, I satisfied myself that if the particulate matter could be removed from a water by means of any of the ordinary filters it was possible to render even a highly polluted water perfectly safe for drinking purposes by the addition of appropriate amounts of

chlorine, and that these appropriate amounts could be determined by means of the iodine and starch test.

Quite recently I have heard from Colonel Horrocks, who has given considerable attention to this question, that instructions have been issued from the War Office that a definite quantity of bleaching powder should be added to any suspicious water *after careful filtration through a good rough filter*. Moreover, Colonel Horrocks informs me that he has devised a specially large and serviceable filter for the removal of particulate matter from water that is to be treated with this bleaching powder. I believe that by these means he has greatly reduced the risk of typhoid and other infections being conveyed through water-borne bacilli. I realise, of course, the difficulties of getting the test described below carried out in the field, but the importance of keeping the amount of bleaching powder as low as possible (so that there may be no taste of chlorine given to the water)—whilst at the same time of resting assured that a sufficient amount of bleaching powder has been added to render the water "sterile"—is so great that I venture to ask you to publish the following method of testing and sterilising water for the information of those in charge of the water-cart tanks supplying troops on active service.

All water except that from public tap-water (potable) supplies must be regarded as dangerous and unfit for drinking.

Filter through the best rough filter available—e.g., army service filter, improvised sand filter, &c.

Pollution in water may be detected and the water rendered safe for drinking by the following method:—

TEST BEFORE TREATMENT IN BULK.

Instructions I.—Rinse a clean service enamelled iron or earthenware reputed pint mug 1 (Fig. 1) with the water to be tested, leaving a few drops in the vessel. Add the 2 grammes of bleaching powder (chloride of lime, chlorohypochlorite of lime) contained in one of the glass tubes "A" (white label) and make into a thin paste, rubbing it down with a clean stylographic pen, penholder, pencil, or glass or

FIG. 1. FIG. 2.

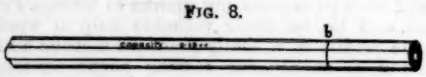
other similar clean rod available. Then add 500 c.c. or 18 oz. of water (i.e., fill to within ¼ inch of the lip of the enamelled mug or ⅜ inch of the lip of an earthenware mug) and mix thoroughly by pouring into a second mug (Fig. 2) and then back into 1. The quantities indicated below of the resulting solution may be used for testing purposes; the remainder is used for sterilising the water. This solution should contain 0·66 gramme of available chlorine.

Instructions II.—Now fill four service reputed pint mugs to within ¼ inch of the top with the water to be tested. Then allow the bleaching powder solution to rise

FIG. 3. FIG. 4. FIG. 5. FIG. 6. FIG. 7.

in a pipette graduated to contain 0·15 c.c. (Fig. 8) to the mark (b); wipe the outside of the pipette and blow the contents into one (Fig. 3) of the four mugs of water to be tested. Add two similar charges of the pipette to a second of these mugs (Fig. 4), three charges to a third (Fig. 5), and four charges to a fourth (Fig. 6), in each case mixing thoroughly (as under Instructions I.), and allow to stand for 15 minutes. Then into a clean mug (Fig. 7) crumble one of the small tablets of iodide of potassium contained in tube "C" (red label); also after powdering, in the corner of an envelope or between a couple of layers of clean paper, one of the compressed starch tablets "B" (blue label)—other forms of soluble or boiled starch may be used if these tablets are not available—and pour into it the water from 3, and mix by pouring backwards and forwards from one vessel to the other. Add iodide of potassium and starch to 4, 5, and 6,

FIG. 8.



2 3 size.

treating in the same way. When a blue colour appears in any of these mixtures it is an indication that the chlorine has not all been used up in that mixture; what remains sets iodine free from the iodide of potassium, which acting on the starch gives a blue colour—i.e., more available chlorine than was necessary to carry oxygen to the organic matter and less resistant organisms has been added, and the water treated in bulk as under Instructions III., is rendered "safe." To free the water from the bacillus coli communis and from non-spore-bearing pathogenetic water-borne organisms it is not necessary to add more bleaching power than is indicated as required by the test.

Instructions III.: Sterilisation of the water.—Should No. 3 give a blue, violet, or brown colour (best seen by daylight) the contents of No. 1 (Fig. 1) may be divided into two equal parts, each of which is sufficient to sterilise 110–120 gallons of water. Distribute this amount, pouring equal quantities into each of the four divisions of the service tank when it is about half filled, and when filled allow to stand for 20 minutes. The water may then be used for drinking without filtration or further treatment. Should No. 3 give no colour, but No. 4 become blue, add the whole of the contents of No. 1 to 110–120 gallons, distributing in the same way and rinsing the mug several times so as to wash into the tank the whole of the bleaching powder. Should No. 4 give no colour, but No. 5 become blue, dissolve a second sterilising powder "A" (2 grammes of bleaching powder) and add half of it along with the contents of No. 1 to the 110–120 gallon tank. Should No. 5 give no colour, but No. 6 become blue, add the whole of the contents of the two tubes "A" to 110–120 gallons. In each case allow the water to stand for 20 minutes before issuing it for drinking. Should No. 6 give no colour the water should be regarded as highly polluted, and as palatability is a matter of some importance it should be boiled. By the addition of more bleaching powder, however, up to 6 or 8 grammes per 110–120 gallons it may be rendered innocuous, though in some cases it may be less palatable.

N.B. (1) The great advantage of this method is that it is not necessary to await the result of a bacteriological examination. The amount of bleaching powder required to render the water safe for drinking purposes may be determined in 20 minutes. Where a new or a variable water has to be used, this is a matter of prime importance.

(2) Other advantages are that with exception of the pipette no special apparatus is required, and that as the same solution is used for both testing and sterilising any fall in the available chlorine content of the sterilising powder is equalised by a similar fall in the test solution, and the need for the addition of more sterilising powder at once indicated.

(3) If for any reason the supply of standard sterilising tubes should fail it will be found that three times as much fresh, clean, dry, loose bleaching powder (which should contain 33 per cent. of available chlorine) as can be lifted on a sixpenny piece grasped at the edge between the thumb nail and the tip of the first finger and used as a spoon weighs 2 grammes and corresponds to the amount contained in one of the standard sterilising tubes.

(4) A rough test of the condition of the water to which bleaching powder has been added may be made by taking a cupful of water from the tank 15 minutes after the addition of the sterilising powder, dissolving in it one each of the tablets "B" and "C" (starch and KI) and mixing thoroughly. Should no colour appear add another charge to the tank, and again apply the rough test.

(5) A treated water to be "safe" should, at the end of 15 minutes, always give a blue "reaction" on the addition of the tablets "B" and "C."

This method may also be used for the testing and sterilisation of the water-supplies of small communities. I hope shortly, as a result of a series of experiments now nearly completed, to publish further information on several important points concerning the action of bleaching powder on spores, the effect of "killing" the chlorine, &c. In the meantime, I wish to express my thanks to Messrs. Parke, Davis, and Co. for their valuable help in working out the details of a really practical method and for agreeing to supply the testing outfit containing bleaching powder and tablets of iodide of potassium and starch, to Sir John Brunner, Bart., to Messrs. Burroughs and Wellcome, and to the United Alkali Company, all of whom have assisted me with valuable information. Finally, I must place on record my indebtedness to my assistant, Mr. W. A. Mitchell, who has carried out a number of the experiments for me and kept them going when I was occupied with other work, often of a very different kind, that has had to be done during the last few weeks.

Cambridge.

JUXTA-EPIPHYSIAL STRAIN OF THE LOWER END OF THE HUMERUS AND ITS DETECTION BY A DIAGNOSTIC LINE.

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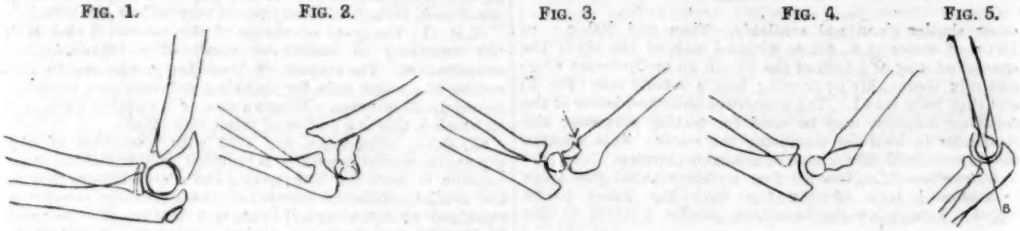
(*With a Note on Treatment, by* W. H. TRETHOWAN, F.R.C.S., M.B., B.S. Lond., *Surgeon to the Orthopædic Department, Guy's Hospital.*)

THIS condition is a common one, and is, as far as my experience goes, unrecognised by the surgeon. The ultimate effect is limitation of flexion and extension. I believe it constitutes the explanation of deficient movement in the elbow-joint so often met with in after-life, when the patient is seldom able to give a definite history of injury. The injury, or the accident causing it, is often very trifling and easily forgotten.

FIG. 1. FIG. 2. FIG. 3. FIG. 4. FIG. 5.



Fractures and bending of lower end of humerus. Diagnostic line.

Many years ago an examination of the X ray reports of Guy's Hospital showed that of all the cases of children therein recorded 20 per cent. suffered from fracture of the lower end of the humerus. To-day, owing to the increased uses of the X rays, the percentage is nothing like so great, but it still ranks as the commonest fracture of child life. In the complete fracture the bone gives way somewhere across the upper part of the olecranon and coronoid fossæ, the line of fracture running first horizontally backwards, then upwards and backwards. The lower fragment is displaced backwards, taking with it the ulna and radius. (Fig. 1.) Occasionally the lower fragment does not get bodily displaced, but is tilted backwards, the upper end still remaining in contact with the humerus, while the lower end is forced back. (Fig. 2.)

A still less pronounced condition is that seen in Fig. 3, where the bone is just beginning to tear, and in Fig. 4 a mere bending is visible, which is invariably overlooked. This latter is the condition I would call attention to, and would point out a means by which it can easily be detected.

In the normal adult humerus, viewed radiographically from side to side, the lower joint surfaces present themselves as a complete circle. (Fig. 5.) It is easy to make out the floors of the two fossæ above this circle. If A B, a straight line, be ruled along the anterior border of the humerus its continuation downwards will be found to cut the circle at its centre or thereabouts. This line gives us the proper position of the lower articular surfaces of the humerus. In other words, when the centre of the circle or disc, which is the X ray shadow of the lower articular surfaces, falls behind the continuation of a straight line representing the general direction of the anterior surface of the humerus there is a certainty of a bending or breaking of the lower end of this bone. Where the epiphysial cartilage is still present and is evident as a clear space, the articular surfaces do not give a perfect circle but usually a half circle. In applying my diagnostic line it will be necessary to complete the circle, in imagination or with dividers. The rule will then hold good, and the centre will be found to fall on, or in front of, the diagnostic line.

Children suffering from this bending of the lower end of the humerus complain of pain in the elbow-joint, but movement is good and the swelling is moderate. They are treated for a traumatic synovitis. It would be better if all these injured joints were radiographically examined in the method I have detailed above, the greatest care being taken to get a purely lateral radiogram, which can only be accomplished by careful arrangement of the limb during screen examination.

The illustrations are tracings from skiagrams.

A NOTE ON THE TREATMENT OF THIS CONDITION.

The accident which produces this condition may be a fall on the outstretched hand, a twist of the forearm, or direct violence. Voluntary movements are painful, and there may be distinct tenderness on pressure immediately above the epiphysial line. The ultimate limitation of flexion and extension is a mechanical result due to the backward displacement and rotation of the lower fragment, which remains unrecognised and uncorrected. Complete

restoration of function necessitates correct anatomical reposition, and this can easily be accomplished within a reasonable time of the accident by manipulation and forcible correction under an anæsthetic.

The treatment is similar to that of severer degrees of fracture in this region. The forearm should be supinated, then fully extended, and, finally, fully flexed on the upper arm and fixed in this position for a fortnight. Strapping and bandages should be used for this purpose, splints being better avoided. The severe degrees of fracture—the so-called separated epiphysis—may occasionally require an open operation to obtain complete correction, but this will not be commonly the case.

An X ray screen examination will show whether the reduction is complete or not. In any fracture of the lower end of the humerus the one thing to avoid is the too early use of passive movements. All inflammatory symptoms should have subsided before the elbow is allowed to be moved. Massage, as far as it can be done without moving the joint, may be permitted within a few days of the injury. At the end of the period of immobilisation in acute flexion the forearm may be lowered a little and held merely in a sling. Active movements within the small range possible may be encouraged, but passive movements should be prohibited. The best indications for allowing more freedom to the joint are the retention of the range of active movement already won and the absence of pain on movement.

Failure to recognise the pernicious effects of early passive movements in elbow injuries leads to continued inflammation of the joint and protracted stiffness from increased adhesions and callus formation, and may result in a severe degree of permanent disability later. Passive exercises may be usefully employed when the range of movement is increasing.

THE CULTIVATION OF THE TUBERCLE BACILLUS:

CHANGE IN FORM BY GROWTH ON SPERM OIL AND GLYCERINE-EGG MEDIUM.

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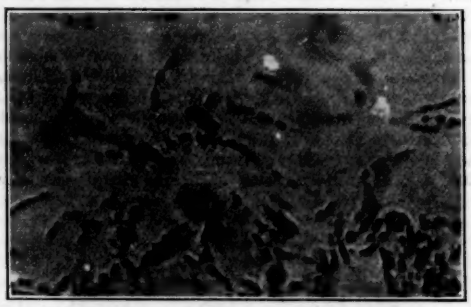
WHILST working on the cultivation of the tubercle bacillus with the aid of waxy substances I have found the tubercle bacillus on glycerine egg (Dorset's medium), to which has been added a little sperm oil, a liquid wax, undergoes certain changes herein described. It loses its power, in part, to stain with carbol-fuchsine. When stained with carbol fuchsine and simply washed, without being further decolourised, a very peculiar appearance is presented. (See Figs. 1 and 3.)

Before going into the changes of the bacilli themselves a description of the mode of growth and the method of making the medium should be given. In the earliest experiments 1·25 per cent. of sperm oil[1] was added to 2 parts of egg with 1 part of 6 per cent. glycerine in normal saline (0·85 per cent.). The bacilli appeared in about the usual time as they ordinarily appear on Dorset's medium, if anything later, in colonies discrete and rather larger and more confluent than is usually found with Dorset's medium alone. But when the percentage of sperm oil was raised the growth altered in character. With actively growing bacilli the growth for the most part appears as a thick, greyish, greasy-looking (in fact, it is greasy) pellicle, spreading uniformly over the surface, and especially thick towards the bottom of the tube, near the water of condensation. This pellicle takes perhaps from two to three months before it reaches its maximum, or the growth may only

[1] The refined sperm oil as ordinarily bought at a drug house.

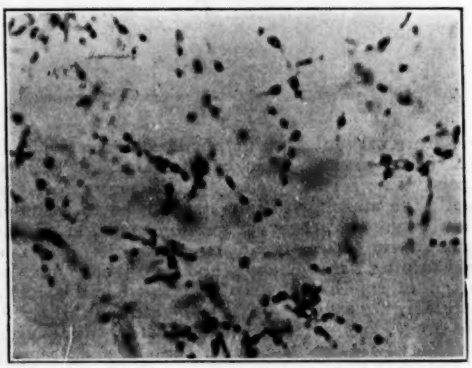
FIG. 1.



Photomicrograph of tubercle bacilli growing on a 2·5 per cent. mixture. Two to three months old culture.

occur as a few white discrete colonies, well raised above the surface. If these, when they have reached a convenient size, are spread over the remainder of the surface growth is accelerated and the bacilli themselves undergo a corresponding change. At the present time a 2·5 per cent. mixture gives the most constant growth, but a 3·75 per cent. mixture, if the bacilli grow well, a richer growth. With a 5 per cent. mixture the bacilli do not seem to grow so well—the colonies are smaller

FIG. 2.



Photomicrograph of culture nearly three months old growing on 5 per cent. sperm oil.

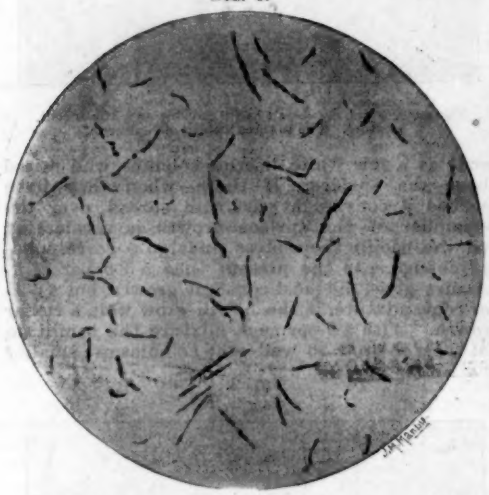
—and growth does not take place so uniformly as may occur with lower percentages. But this may be due to the proportion of sperm oil, glycerine, and egg not being properly adjusted.

To make the medium the sperm oil is poured on to the beaten-up and filtered egg, with the usual precautions as regards sterility, and the glycerine in normal saline is added to the amount required. The mixture is then well shaken

in a flask, poured into sterile test tubes, and set. To get a uniform mixture it has been my custom to set low down in Koch's steamer that coagulation may take place as quickly as possible before all the oil rises to the surface. Each tube is well shaken whilst being laid down in the steamer. Coagulation takes place in about three minutes, care being taken not to let the media rupture. It is then sterilised by steaming for about an hour on three successive days high up in the steamer.

In typical and most favourable growths the tubercle bacillus is altered. In shape it becomes plumper, much longer, and its ends terminate somewhat finely—this is best seen when stained by Gram. The protoplasm of the bacillus undergoes changes. It refuses to stain with carbol-fuchsine in certain parts. Figs. 1 and 3 illustrate these changes. The particular slides from which the figures were made were decolourised with acid-alcohol for about one minute, but the same appearance is given in some cultures, when after staining with carbol-fuchsine the slide is simply washed

FIG. 3.



A drawing of sperm oil tubercle bacilli as seen by the eye under the microscope × 1000.

in water, without any further decolourisation. It will be seen that the bacillus is not stained except in certain parts. In many of the bacilli the staining to non-staining parts assumes some regularity, first a staining portion either in the form of a band, or "granule," then a non-staining band or zone, and so on, through the length of the bacillus, so that the bacillus looks extremely "beaded." These "granules" (Fig. 2) are large, round, refractile bodies, distending the body of the bacillus; they are extremely acid-alcohol fast, and usually are the last to go on decolourising with acid-alcohol, HCl 1 cubic centimetre, 70 cubic centimetres of 70 per cent. alcohol, and water to 100 cubic centimetres. The bacillus can be, within quite a short time of decolourisation, some few seconds, rendered colourless except for these refractile "granules." There does not appear to be any method in which the bands or "granules" are situated in the length of the bacillus. Sometimes there is only one round body at the end as the spore of a tetanus bacillus, or there may be one at each end giving a bipolar appearance, or there may be one or two, or more, situated either close together or far apart. I may say here that a very similar appearance is given in a plate and photographs in a paper by Wherry.[2] The body and colourless portions of the bacilli refuse to stain with such dyes as methylene blue and Bismarck brown used as counter-stains. No doubt some of the staining portions of the bacilli are what are known as metachromatic granules, but an Ernst[3] preparation does not give the same "beaded" appearance as a fuchsine one. The "beaded" appearance of a fuchsine preparation is brought out much clearer when decolourised with the usual decolourising agents; but decolourisation must not be carried too far, as the bacilli and "granules" may become so faint as to be scarcely visible. I have seen the bacilli completely decolourised as white shining masses within a period of two minutes or a little more. By Gram there is a very uniform picture of faint diaphanous forms, with violet-staining "dots" in the length of the bacillus.

This description applies to cultures which have grown with a rich, moist, greasy growth on the higher percentages of sperm oil, and where time has been given to let the changes come about—i.e., the older the culture the more it forms "granules." Fig. 3, a drawing, was from a culture not quite two months old grown on a 3·75 per cent. mixture of sperm oil and glycerine egg. It has been growing since October last on a 1·25 per cent. mixture, and has been subcultured twice till April, when it was subcultured a third time on to the 3·75 mixture. Although the drawing represents bacilli growing on sperm oil since October, yet the same changes occur and to the same degree in two months' time or less when grown on the higher percentages as 3·75 or 5. A strain of bovine bacilli kindly given me by Dr. J. C. G. Ledingham, of the Lister Institute, behaves apparently in the same way; it seems to give the same changes microscopically and is growing luxuriantly on the mixture of egg, sperm oil, and glycerine.

Most of this work was done whilst assistant clinical pathologist to the General Infirmary, Leeds, the remainder here.

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ANKYLOSTOMIASIS IN FIJI.

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THE methods adopted for the prevention and treatment of ankylostomiasis in the Navua district of Fiji during the year 1913 are, I think, worth a brief note in THE LANCET.

The Navua district of Fiji contains just over 2000 indentured Indian immigrants distributed among 12 large estates. The whole district is a large swamp with an annual rainfall of over 100 inches. For the three years previous to 1913 the general death-rate for the indentured Indians, excluding deaths from accident and violence, was as follows:

Year.	Adults.	Children.	Total (per 1000).
1910	75·7	237·8	96·6
1911	34·2	156·5	48·1
1912	36·7	137·9	50·3

On my appointment to act as medical officer to this district in February, 1913, it appeared that this

[2] Wherry, W. B.: Some Chemical Conditions favouring the Production of "Spores" in B. tuberculosis, Centralblatt für Bakteriologie, Originale, 1913, vol. lxx.

[3] Staining the slide with Löffler's methylene blue and passing slide over a Bunsen flame for half a minute after steam begins to rise. The preparation is then washed and counter-stained for one to two minutes in watery Bismarck brown.

death-rate was almost entirely due to the excessive amount of ankylostomiasis among the coolies, the majority of whom showed marked signs of infection. In previous years a certain amount of work had been done for the prevention of the disease, but no really wholesale campaign had been undertaken.

My campaign included the following measures:—1. Improved general sanitation in the coolie lines especially. 2. Greater care by the overseers that the latrines were used. 3. Portable latrines for use in the field. 4. Immediate (or as early as possible) treatment of all coolies obviously affected. Over 4000 treatments by thymol were given in the year. 5. Immediate treatment of the skin eruption. 6. Education of those in authority. 7. Explanation to the coolies. 8. Frequent inspection of all coolies for signs of ankylostomiasis. 9. Spraying of lines and neighbourhood of lines with 1 per cent. solution of ferrous sulphate. The Vancouver-Fiji Sugar Company detailed a gang of coolies with an overseer for this work. 10. Boots were tried as an experiment with the labour of one estate. This last measure has since been abandoned owing to the difficulty of supervision. The coolies take their boots off when the overseers are not looking. Measure No. 3 was not properly carried out. It is my opinion that Measure No. 8 is the most efficacious as regards immediate results.

The death-rate for 1913 per 1000, including deaths from accident and violence, was: adults, 19·47; children, 116·00; total, 29·31. Exclusive of deaths from accident and violence (notions of which vary with different observers) the death-rate per 1000 for that year was: adults, 18·42; children, 96·0; total, 26·29. Mr. L. A. Andrews, hospital superintendent at Tamanua Hospital, was responsible for a very large share of this work, whilst the manager and overseers of the Vancouver-Fiji Sugar Company gave all the help in their power. Without the coöperation of these gentlemen the result could not have been achieved.

Fiji.

EARLIER INDICATIONS OF GAS FORMATION BY COLIFORM ORGANISMS,

WITH DESCRIPTION OF A MODIFIED FERMENTATION TUBE.[1]

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AND
F. NICHOLLS.
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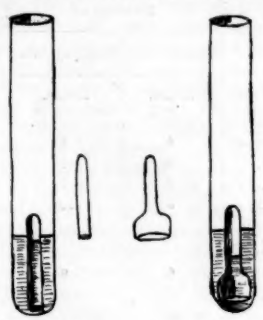
THE formation of gas during bacterial growth on nutrient media containing sugars, &c., has been used as an indication of the power of the micro-organism to hydrolyse and to utilise these substances. Bacteria differ in their capacity to break up monosaccharides, disaccharides, polysaccharides, glucosides, alcohols, &c., and this character has suggested the collection and identification of the products of cleavage as a means of differentiation and classification.

Of late years special attention has been directed to the quantity and quality of the gas produced, and the results obtained have led to a better knowledge of the metabolic activities of B. coli, &c.[2] The apparatus generally employed for this purpose is somewhat complicated, and the organisms have been allowed to grow for about seven days prior to the analysis of the gases produced.[3]

For qualitative work, in order to demonstrate the presence of gas-forming organisms in clinical materials or during the examination of water or milk, a straight glass tube, known as Durham's tube, is frequently employed in preference to the U-shaped or similar tubes. By its use this stage in diagnosis is completed in from 12 to 24 hours. Many instances occur, however, in which the saving of a day or even of a few hours is of consequence to the laboratory worker, clinician, or patient. To lessen the time, therefore, Emrys-Roberts investigated the effect of increasing the sugar content of the media, and found that when the usual 1 per cent. of lactose was made up to 15 per cent. the gas formation was accelerated. With some slow lactose fermenters, which required 26 days with 1 per cent. solution, he obtained gas formation in two days when a 15 per cent. solution of lactose was employed.

The work now recorded has resulted in a further diminution of the time involved, making it possible to demonstrate the formation of gas in about four hours. It has also indicated certain differences in the rate and type of cleavage of the several substances. We have found that an advantage is gained by using a tube for the collection of the gas which is bell-shaped at its lower end and almost entirely fills the test-tubes (see Figure).[4] The whole



Old tube. New tube.

of the gas formed in the lower stratum of fluid passes upward into the collecting tube, while convection currents are set up which cause gas evolved in the middle portion of the media to find its way into the dome-shaped cavity.

Elsewhere the advantage of neutralised pure silk peptone over Witte's peptone, or other complex mixtures, as bacterial food has been shown by one of us, and silk peptone has been employed with success in the present set of experiments.[5] Table I. shows the comparison of Witte's peptone and silk peptone as media for growth of colon bacilli, and points out that the best results are got with a media composed of 2 per cent. silk peptone and 5 per cent. lactose—that is to say, gas becomes evident in 4 hours, as compared with 8 hours by the ordinary tube, or 10 and 12 hours when Witte's peptone is employed.

[1] The cost of this work has been covered by grants from the Bristol University Colston Society.

[2] Rogers, Clark, and Davis: Journal of Infectious Diseases, 1914, vol. xiv., p. 411.
[3] Frieber: Centralblatt für Bakteriologie, Orig., 1913, Band lxix., S. 437.
[4] Made by Herr Firma Goetze, Härtelstrasse, Leipzig.
[5] Walker Hall: Journal of Pathology, vol. xix., 1914.

The Witte's peptone solution was prepared in the usual manner. The silk peptone was used in the crude form made by Hoffmann-La Roche, Basle. The results obtained with purified silk peptone will be reported later. After solution of the crude silk peptone in distilled water it was sterilised; alcoholic solution of phenolphthalein was then added to an aliquot portion, and the amount of sodium hydrate necessary for obtaining a neutral point was determined. The lactose or other sugar was then added and the solution steamed as usual on successive days. The dose of organisms was 100,000,000 or 200,000,000. Counting was carried out in a hæmocytometer. It was found that an average standard loopful of urinary sediment in cases of cystitis contains about 100,000,000 organisms. The inoculated tubes were examined hourly throughout the set of experiments.

In order to see if the gas formation could be still further accelerated neutral veal broth containing 1 per cent. Witte's and silk peptone and varying amounts of sugars was employed. The veal broth in all the experiments was tested for the presence of sugar prior to the addition of lactose, &c.; gas

TABLE I.—*Time of Gas Formation by Coliform Organisms in Hours. Rapid Fermentation Tube and Ordinary Tube.*

Media.	Number of coliform organisms inoculated into 4 c.c. of medium—							
	100 millions.		200 millions.		400 millions.		800 millions.	
	Special tube.	Ordinary tube.	Special tube.	Ordinary tube.	Special tube.	Ordinary tube.	Special tube.	Ordinary tube.
2 per cent. silk peptone.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.
+ 1 per cent. lactose	10	12	10	15	9	10	6	10
+ 5 ,, ,,	4	8	4	8	3	6	3	6
+10 ,, ,,	10	12	4	12	4	8	4	8
+15 ,, ,,	12	16	11	14	5	10	8	10
2 per cent. Witte's peptone.								
+ 1 per cent. lactose	7	10	6	8	4	8	4	8
+ 5 ,, ,,	10	12	8	12	6	11	4	8
+10 ,, ,,	10	12	8	12	5	11	5	8
+15 ,, ,,	10	12	8	10	5	10	5	8

TABLE II.—*Time of Gas Formation by Coliform Organisms in Varying Media.*

Media.	Number of coliform organisms added to 4 c.c. of medium—							
	100 millions.		200 millions.		400 millions.		800 millions.	
	Special tube.	Ordinary tube.	Special tube.	Ordinary tube.	Special tube.	Ordinary tube.	Special tube.	Ordinary tube.
Neutral veal broth with 1 per cent. Witte's peptone—	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.
+ 1 per cent. lactose	4	6	4	6	4	6	4	6
+ 5 ,, ,,	5	7	4	6	4	6	3	6
+10 ,, ,,	4	7	4	6	4	6	3	6
+15 ,, ,,	6	10	6	8	4	8	4	8
Neutral veal broth with 1 per cent. silk peptone—								
+ 1 per cent. lactose	6	9	5	9	5	8	5	7
+ 5 ,, ,,	5	9	4	8	4	8	4	7
+10 ,, ,,	5	9	4	8	4	8	4	7
+15 ,, ,,	5	10	4	10	4	10	4	10

TABLE III.—*Time of Gas Formation by Slow Lactose Fermenters.*

Medium. Neutral veal broth with 2 per cent. silk peptone and 5 per cent. lactose.

Strains.	Number of organisms added to 4 c.c. of media—							
	100 millions.		200 millions.		400 millions.		800 millions.	
	Special tube.	Ordinary tube.	Special tube.	Ordinary tube.	Special tube.	Ordinary tube.	Special tube.	Ordinary tube.
	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.	Hours.
Penfold I.	21	42	21	42	16	18	16	18
Penfold III.	16	21	16	18	16	18	14	17
Penfold Amb. F. ...	6	12	4	11	4	10	4	9

was not produced in it by B. coli during seven days. Table II. gives the results given by a laboratory strain of B. coli.

As a result of these observations it was decided that a good medium for B. coli was neutral veal broth with 2 per cent. silk peptone and 5 per cent. lactose. This medium was accordingly employed for the growth of some slow lactose fermenters, originally isolated by Dr. W. J. Penfold, of the Lister Institute, and made available by the courtesy of Professor E. Emrys-Roberts, of Cardiff. These strains fermented lactose in 2, 5, and 26 days. From Table III. it will be seen that with the medium now employed the time was reduced to 11, 18, and 42 hours, while the use of the special fermentation tube reduced this still further to 6, 16, and 21 hours.

When constant doses of B. coli are added to equal quantities of silk peptone media containing various sugars, the time at which the gas formation is first evident in the modified tube appears to be proportionate to the complexity of the substance concerned. Table IV. shows a gradual increase in the time necessary for gas evolution from the mono- to the poly-saccharides and the various glucosides and alcohols. How far these times will prove constant with different strains and under varying conditions is a matter which is now engaging our attention.

TABLE IV.—*Gas Formation by B. Coli in Various Sugars, &c.*

Dose 100 millions. Medium. Veal broth with 2 per cent. silk peptone and 1 per cent. sugars, alcohols, or glucoside.

—	B. coli.		Pneumobacillus.	
	Specia tube.	Old tube.	Special tube.	Ordinary tube.
Monosaccharides—	Hours.	Hours.	Hours.	Hours.
Arabinose	4	7	5	10
Lævulose	5	7	6	17
Glucose...	6	8	5	8
Galactose	6	9	4	9
Disaccharides—				
Lactose	7	10	8	11
Maltose	8	10	8	11
Saccharose	10	16*	5	17
Trisaccharides—				
Raffinose	16	28	5	10
Polysaccharides—				
Dextrine	28	42	6	10
Starch	72	96	22	—
Glucoside—				
Salicin	72	96	8	11
Polyatomic alcohols—				
Mannite	7	16	6	8
Sorbite	16	20	5	10
Dulcite	21	42	8	18
Glycerin	120	140	16	18
Adonite...	7 days.	—	12	18
Inulin	9 ,,	—	22 ?	—

* Another strain 40 and 90 hours.

Some further results already obtained have suggested an inquiry into the question of media in relation to the capacity of organisms to ferment sugars. Growth of intestinal bacteria in silk peptone solutions is associated with increased activities in the breaking-down of the generally used sugars, glucosides, or alcohols. The assumption of these characters has induced us to proceed with an investigation into the constancy of gas-forming properties and the underlying principles concerned.

The silk peptone facilitates the growth of colon bacilli in solid media also. When the Witte's peptone in nutrient agar is replaced by silk peptone, growth is more rapid, and in the presence of sugars gas is produced in about eight hours—namely, in half the time which is usually taken.

PARATYPHOID INOCULATIONS.

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A SPORADIC case of paratyphoid fever having been diagnosed in the service of Dr. August Marie at the asylum of Villejuif, he and Dr. Legrain requested me to inject a certain number of their patients, with a view to determine any efficacy of such inoculations in preventing the spread of the disease or its becoming endemic. The causative bacillus isolated from the case diagnosed was not kept, and my first thought was to employ varied strains in series of patients who had been in association with the sufferer and watch results. Others, non-injected, would serve as controls. Marked reactions following injections of the paratyphoid B bacilli prepared according to the usual methods soon showed themselves, and in the interests of the inmates I felt justified in enlarging the sphere of work and in attempting to find a method applicable and, we trust, useful in this asylum, or whenever preventive or curative injections may be indicated.

Of the published results of prophylactic injections of paratyphoid B bacilli I may for its particular interest cite those of Castellani, who in his interesting paper[1] has shown that certain strains of paratyphoid B when heated to 50° C. during one hour were non-virulent. However, with two strains I found that there was a localised abscess formation if the dose, even for a second, were 750 million. There is always present the important question of difference of strain to be considered. Without entering into the question of the division into separate groups of bacillus enteritidis, B. suipestifer and bacillus paratyphosus B, it may be stated that the earlier work was confined to five strains of what were typical of the group paratyphoid B; they were isolated from blood streams. Four were from sporadic cases where the symptoms bore close relation to those seen in typhoid fever. The fifth strain, B (a.), was from the epidemic at Wrexham, where it will be recalled the subjects infected showed symptoms of acute toxæmia, known as food poisoning, and subacute typhoid-like fever, with certain later cases showing a transmission of the infection. Close serological relationships brought this bacillus B (a.) into line with the four other strains, B (w.), L_1, L_2, and M, as distinguished from those of a typical B. enteritidis and B. murium later studied comparatively.

A method to be employed should permit immediate application of the recently isolated micro-organism to those suffering and to contacts, doses being made accordingly. Where a carrier is responsible special measures should also be applied.

Injections of certain strains of other related

[1] Journal of the Ceylon Branch of the British Medical Association, October, 1913

groups were also made with a view to determine the practicability of a similar method for paratyphoid A bacilli and for any useful results to be gleaned from an inter-group comparative study. Colonel Leishman's publication of statistics goes to show that antityphoid vaccination does not protect against paratyphoid A infections, and Hay's report on paratyphoid B infections after recent attacks of typhoid fever may be cited in proof of the absence of an inter-group immunity from B. typhosi.

My guiding theory has been that immunity for the endotoxin-containing microbes depends mainly on the production of anti-endotoxic properties of sera, reinforced phagocytosis, and changes produced in certain sensitive body cells that will serve them in their defence. The bacilli after contact with their specific antiserum give rise to less local reaction, are more readily lysed and taken up by phagocytes, and may be by other body cells, thus facilitating their being dealt with. It has been shown that subcutaneous injections of certain micro-organisms do lead to the formation of anti-endotoxic serum properties. Rowland has recently demonstrated their formation to plague bacilli. Animal experiments have shown that dead micro-organisms prepare the body for the living, and in general the latter give a higher degree of immunity. Such a procedure I have followed in the attempt to vaccinate man. Heat modifies according to its duration and intensity, and I hold it is better to apply only that degree necessary. The bacilli were thus attenuated; few were killed (as was determined by sowing various dilutions of them and of the unheated).

To have on hand a prepared animal antiserum whose antibodies would specifically sensitise the strain causing an epidemic is a remote chance; and it appeared of value to determine if one could use the serum of a patient when specific antibodies were produced, or that of one or more subjects who had received previously two small injections of the dead bacilli. One could thereby sensitise the micro-organisms with antibodies present in human sera and give much larger doses thereof without troublesome reactions, and I trust produce the rapid and lasting immunity seen to be produced by other sensitised micro-organisms. Steady and patient procedure, careful clinical observations, and serological examinations have led to the evolution of a method which clinically is giving apparently most satisfactory results. It is to be hoped that the difficulty of vaccinating certain animals against strains of paratyphoid B does not equally apply to man. The application of this double method with certain other micro-organisms—B. coli, proteus, typhosus, streptococci, staphylococci, and gonococci, etc.—has been employed in treatment, and one is here again much encouraged to continue it.[2]

Preparation of injections.—In the double method employed a 20-hours growth of bacilli on peptone agar was washed off in 10 c.c. saline and for the preparation of dead bacilli was heated to 53° C. for B. paratyphosus A and B. typhosus, or 56° C. for B. paratyphosus B during one hour, counted or otherwise enumerated, centrifuged, and the deposit diluted in saline, so that 1 c.c. contained 250 million bacilli. In the preparation of the attenuated living sensitised bacilli the 10 c.c. dilutions were heated to 50° C. for paratyphoid A and typhoid, and to 53° C. for paratyphoid B during one hour, then counted or otherwise enumerated, centrifuged, and the deposit diluted to have 25,000 million to 1 c.c. saline. One-tenth of this was placed to each c.c. of inactive human serum in a centrifuge tube. They remained in contact half an hour at 37° C. and 12 hours in the ice chamber. The contents were centrifuged and the deposit diluted with saline to contain 250 million to 1 c.c. Serological examinations indicated the using of the above quantities. The human sera were taken before a meal and eight days after the second injection of dead bacilli. All preparations were kept in such a dilution and in a cool dark place till wanted.

Inoculation intervals were 7–9 days. I did not think it necessary to exclude tuberculous subjects if the disease be not obviously active, nor those who showed but a trace of albumin in their urines.

Reactions.—These will be described with each series. In general it was observed that dead bacilli of the paratyphoid B groups gave rise to more local reaction than similar numbers of typhoid T. or paratyphoid A. These reactions were always concentrated rather than extended. The higher elevations of temperature never lasted beyond 36 hours. In earlier series, following injections of unheated bacilli, there was an occasional persistence of an unabsorbed abscess, sometimes up to five weeks, wherefrom living bacilli were isolated. Prolonged general symptoms were not produced, and the blood slowly diminished in agglutination and fixation of complement powers. Such reactions and findings were instructive in showing localised defence. The bacilli could never be isolated after injection (24 or 48 hours or some days) from the blood, fæces, or centrifuged urine. All serological examinations of blood made two months after the last injection showed less specific amboceptor and agglutinin properties than that taken after eight days, and these results, together with the fact that despite the uncleanly habits and close daily contact amongst inmates of an asylum there has been after twelve months no case of fever, tend to confirm previous findings after typhoid bacilli injections that the bacilli are not conserved nor excreted, but are destroyed locally or in the body tissue.

Bacilli.—The strains T (v.), BL_1, BL_2, and B.M are of recent isolation, B (w.) and P. A have been conserved about two years, and B (a.) and T., and B. enteritidis longer. The bacillus murium is kept in its most virulent state for the mouse by passage. It is with this strain that the rat virus sent out by the Pasteur Institute is prepared.

Series 1.

TABLE I.

Groups of subjects.	Sept. 22nd, 1913.	Oct. 2nd, 1913.	Oct. 16th, 1913.	Oct. 28th, 1913.
1, 2, & 3.	250 m. T. dead.	500 m. T. dead.	250 m. T. sensitised living.	500 m. T. sensitised living.
4, 5, & 6.	250 m. P. A dead.	500 m. P. A dead.	250 m. P. A sensitised living.	500 m. P. A sensitised living.
7, 8, & 9.	250 m. P. B (a.) dead.	500 m. P. B (a.) dead.	250 m. P. B (a.) sensitised living.	500 m. P. B (a.) sensitised living.
10, 11, & 12.	250 m. P. B (w.) dead.	500 m. P. B (w.) dead.	250 m. P. B (w.) sensitised living.	500 m. P. B (w.) sensitised living.

Reactions.—After the first two doses (see Table I.) the local and general reactions were all slight. After the two later living vaccines there were no noteworthy general reactions. The local reactions following in those who had received the bacilli typhosi or paratyphosi A were small and passed in three to four days, but in those who had received the two living strains of B. paratyphosus B (a.) and B (w.) they were marked. The reactions were concentrated, and

[2] International Congress of Medicine, 1913.

on the fifth day following the first living—i.e., third—injections all except one (No. 10) had slight infiltration and softening at the site. Three days later I pipetted from Nos. 8, 9, and 12 a little unabsorbed fluid which showed microscopically few microbes, mainly intact phagocytes, little serous exudate, and no signs of necrosed tissue. A pure culture of bacilli was grown. All signs of reactions disappeared after three to four weeks. Following the last injection the results were similar in all save No. 10. In the case of No. 7 I was just able five weeks after injection to withdraw into a pipette some remaining unabsorbed fluid. It showed microscopically degenerated and intact phagocytes, but no microbes, and on agar a few colonies of the bacilli in pure state grew. The inflammatory redness and œdema around the concentrated reactions disappeared after some days, but a quantity of exudate equal to about 1 c.c. was slow in absorption. The method showed clinical defects and was abandoned as impracticable of application to the strains of paratyphoid B employed.

After the first two injections and after four injections the sera were taken and agglutination properties examined. Time, three hours at laboratory temperature (Table II.). The sera

TABLE II.

Sera	T.	P.A.	P.B(a.).	P.B(w.).
After first two Injections.				
Bac. T.	1 : 200++	—	—	—
,, P.A ...	—	1 : 100 slight.	—	—
,, P.B(a.)...	—	—	1 : 50+	—
,, P.B(w.)	—	—	—	1 : 100++
After four Injections.				
Bac. T.	1 : 500	—	—	—
,, P.A ...	—	1 : 500	—	—
,, P.B(a.)...	—	—	1 : 500	1 : 100
,, P.B(w.)	—	—	—	1 : 500+

were pooled by groups. Dilutions 1 : 10, 1 : 50, 1 : 100, 1 : 500, 1 : 1000. Cultures of 18 hours. Controls all negative. A regrettable accident to some control tubes prevented the recording of the fixation of complement test with accuracy. It appeared that the complement was fixed by smaller quantities of serum after four than after two injections, though the last two injections were of sensitised microbes. This point will be later referred to in detail.

Series 2.

This series was next undertaken to essay, with the two strains of paratyphoid B (a.) and B (w.), the method introduced by Castellani, with later injections of living sensitised unheated bacilli. In the same series were included two groups of subjects, to each of whom were given higher doses of P.A or of another strain of B. typhosus recently isolated from the gall-bladder of a patient who died from typhoid fever of acute toxæmic form. The 10 c.c. dilutions of 20-hours growth containing about 25,000 million bacilli in saline 0·85 per cent. were heated at 53° C. during one hour. The paratyphoid A and typhoid bacilli were thus killed, but the paratyphoid B (a.) and B (w.) resisted. All doses were made to 1 c.c. saline 0·85 per cent. Grouped sera were used for sensitising; these were taken eight days after the second dose. (Table III.)

TABLE III.

Groups of subjects.	Oct. 21st, 1913.	Oct. 25th or 28th, 1913.	Nov. 4th, 1913.	Nov. 10th, 1913.
1, 2, 3, 4, & 5.	250 m. P. B (a.) heated 53° C. 1 hour, living.	750 m. same.	125 m. sensitised living.	125 m. same.
6, 7, 8, 9, & 10.	250 m. P. B(w.) heated 53° C. 1 hour, living.	750 m. same.	125 m. sensitised living.	125 m. same.
11, 12, 13, 14, & 15.	500 m. P. A heated dead.	1000 m. same.	250 m. sensitised living.	250 m. same.
16, 17, & 18.	500 m. T (v.) heated dead.	1000 m. same.	250 m. sensitised living.	250 m. same.

Reactions.—The reactions to the first injections were as in Series 1. After the second dose the local reactions to bac. P.A and bac. T (v.) were slight and passed entirely in 4 days. Those to bac. P.B (a.) and P.B (w.) were similar for 2 days, but persisted and became concentrated, slightly red, and indurated masses 2·3 cm. in diameter. On the eighth day I pipetted from Nos. 1, 2, 3, and 6 the unabsorbed fluid which gave similar findings to those found in Series 1. After doses 3 and 4 both bac. P.B (a.) and P.B (w.) produced in Nos. 1, 2, and 6 an initial inflammatory œdema and redness of about 10 cm. with later a central point of fluctuation till a nodule formed.

Clinically the bac. P.B (a.) and P.B (w.) in initial injections as living heated bacilli did not lead to the innocuous injection of these as living sensitised non-heated bacilli, nor was the fourth dose, exactly similar to the third, more rapidly absorbed. The marked virulence of these two strains of paratyphoid is diminished by this heat (as may be judged from the first dose compared to the third and fourth). The small collections of pus after the second doses are probably due to the endotoxins of the bacilli, for by culture and the microscope there was a diminution and not a proliferation of bacilli. General reactions were never marked. The clinical results again determined the impracticability of utilising the para. B bacilli so treated. The two strains of paratyphoid used are markedly more toxic for man than three others later studied, and I presume from this that the strains employed by Castellani were also less toxic.

The serological examinations (Tables IV. and V.) were made with sera taken on Nov. 2nd, 1913 (heated to 55° C. for half an hour). Dilutions 1 : 10, 1 : 50, 1 : 100, and

TABLE IV.

Sera pooled.	Antigens. B (w.).	T.	P.A.	B (a.).
B (a.) ...	0·1 partial. ... 0·2 positive.	0·1 partial. ... 0·2 positive.	0·1 negative. ... 0·2 partial.	0·1 partial. ... 0·2 positive.
P.A ...	0·1 negative. ... 0·2 ,,	0·1 negative. ... 0·2 partial.	0·1 partial. ... 0·2 ,,	0·1 partial. ... 0·2 ,,
B (w.) ...	0·1 negative. ... 0·2 partial.	0·1 negative. ... 0·2 ,,	0·1 negative. ... 0·2 ,,	0·1 negative. ... 0·2 ,,
T.	0·1 negative. ... 0·2 ,,	0·1 partial. ... 0·1 ,,	0·1 negative. ... 0·1 ,,	0·1 negative. ... 0·2 ,,

TABLE V.

Sera of those injected.	Antigens. B (w).	T.	P.A.	B (a.).
B (a.)	1 : 10	–	–	1 : 200+
P.A	–	–	–	–
B (w.)	1 : 200+	–	–	–
T.	–	1 : 100+	–	–

1 : 200. Agglutination as in Series I. Various media were tried for P.A and various ages of culture. Even a highly immunised animal (rabbit) autogenous serum only agglutinated it at 1 : 200 after 12 hours at 37° C., while previously it had done so in 1 : 2500 dilutions.

Further serological examination after 4 doses (Table VI.).

TABLE VI.

Sera.	Antigens. B (w.).	T.	P.A.	B (a.).
B (w.)	0·2+	0·2–	0·2–	0·2+partial.
T.	0·2–	0·15+	0·2–	0·2–
P.A	0·2–	0·2–	0·2+	0·2–
B (a.)	0·2+	0·2+	0·2–	0·2+
Agglutination.				
B (w.)	1 : 250+	–	–	–
T.	–	1 : 200	–	–
P.A	–	–	–	–
B (a.)	–	–	–	1 : 250

Sera taken after injections of paratyphosus B (w.) and B (a.) fixed complement with three other strains of paratyphics B as antigens—viz., BL_1, BL_2, and BM—at the dose of 0·2 c.c., but had very slight agglutinating action upon them, the B (w.) serum more than the B (a.) serum. The serum of patient who had received T. fixed complement with other strains of T. employed as antigens and agglutinated them. The antiserum still failed to agglutinate P.A, while its specific amboceptor contents were increased. Serum B (w.) showed a more marked absolute specificity for its antigen than did B (a.) serum. Specific strain amboceptors can be often first determined. After further injections of the antigen the amboceptors may fix complement on to other allied antigens. The agglutination test remained here, as most often, the more specific. The sensitised microbes following injections of unsensitised microbes slightly increased the agglutination titre, but more so the complement fixation property of the sera.

The next two series show the results from the direct application of sensitised living paratyphoid and typhoid bacilli.

Series 3.

Four patients received as initial injections doses of bacilli living and sensitised by sera from patients who had received two doses of the dead micro-organisms. The first three had para. B (a.) and the fourth B (w.). Each an initial dose of 125 million; then after seven days a second similar dose; a week later a third dose of double the number. To another group para. A bacilli similarly prepared were injected in the same doses.

Reactions.—General reaction slight in all instances. Local reactions markedly concentrated and long to absorb following each dose of B (a.). Those following the injections of B (w.) were as usual, but slightly less than those following B (a.). The subjects who had P.A took much longer to absorb the injections than those mentioned in the earlier series, who previously had injections of the dead micro-organism. My impression from these few cases was that the previous injection of dead micro-organisms does not lead to increased local reaction to the subsequent sensitised living. The injection of living sensitised para. B (a.) produced no change in the tuberculous lesions of a subject.

The serological examinations showed after two doses no fixation of complement in 0·3 c.c. of serum and no agglutination. After the third doses there was specific fixation of complement with P.A, but by not less than 0·3 c.c.; no agglutination. With two para. B (a.) sera the agglutination titre was 1 : 50. One serum gave very slight fixation of complement by 0·3 c.c, but the other serum this exceptional result. Patient's previous history could not be learned. (Table VII.)

TABLE VII.

Antigens	P.B(w.).	P.BL$_1$.	P.BL$_2$.	P.BM.	P.B. (a.).	T.	P.A.
Serum P. B (a.)	0·1∓	0·1+	0·1±	0·1∓	0·1+	0·1 -	0·1±
	0·2+	0·2+	0·2±	0·2+	0·2+	0·1+	0·2+

Series 4.

These same two strains of paratyphoid B and strains of paratyphoid A and typhoid were injected living and sensitised by immune animal specific sera. These sera were from eight rabbits to which six doses of the respective antigens were given, beginning by subcutaneous injections and later peritoneal, the last two injections consisting of first a half and then a whole culture on agar slant (heated to 53° C. during one hour and so not killed). Certain results of the serological examination of these rabbits' sera are appended for their interest (Table VIII.), especially in following on Major Lyle Cummins's work on the paratyphoid A organism.[3] The anti-toxic properties were also tried and will be later reported. The value of these serological findings as indicative of immunisation I do not think it necessary to here discuss.

TABLE VIII.

Rabbit sera.	Antigens. B (w.).	T.	P.A.	B (a.).	BL$_1$.	BL$_2$.	BM.	Enteritidis.
P.A ...	0·05+	0·05+	0·05+	0·05 -	0·05+	0·05+	0·05 -	0·05 -
	0·1 +	0·1 +	0·1 +	0·1 -	0·1 +	0·1 +	0·1 ±	0·1 ±
T.	0·05 -	0·05+	0·05+	0·05±	0·05 -	0·05 -	0·05 -	0·05 -
	0·1 -	0·1 +	0·1 +	0·1 +	0·1 -	0·1 ±	0·1 -	0·1 ±
B (a.) ...	0·05+	0·05 -	0·05 -	0·05+	0·05+	0·05 -	0·05 -	0·05 -
	0·1 +	0·1 +	0·1 -	0·1 +	0·1 +	0·1 +	0·1 -	0·1 -
B (w.) ...	0·05+	0·05 -	0·05 -	0·05+	0·05+	0·05+	0·05+	0·05 -
	0·1 +	0·1 +	0·1 -	0·1 +	0·1 +	0·1 +	0·1 +	0·1 -
Agglutination.								
P.A ...	1 : 500	1 : 500 slight.	1 : 2500	1 : 50 slight.	1 : 100	1 : 200	1 : 200	0
T.	1 : 100 slight.	1 : 3000	1 : 100	0	0	1 : 50	0	0
B (a.) ...	1 : 500	1 : 100+	1 : 100+	1 : 2500	1 : 1000+	1 : 10	1 : 1000+	0
B (w.) ...	1 : 2000	1 : 100+	1 : 100+	1 : 500				0

[Note.—L_2 was partly self-agglutinated in 0·85 per cent. of saline. The culture was shaken with glass beads during four hours without disassociation. After leaving still for some time the saline containing the bacilli that had not clumped and fallen was taken. This strain has always been most easily agglutinated or clumped. In broth cultures they fall to the bottom and leave the liquid clear. Comparative examination with this strain was therefore difficult.] A survey of results show, as in the tested human sera after injections, a more marked specificity to the antigen injected especially in agglutination titre, and certain group reactions.

Two subjects received each two doses, at seven days' interval, of 125 million B. paratyphosi B (a.), and one subject two similar doses of B (w.). The bacilli were sensitised by their respective immune rabbit serum. The general reactions were almost *nil*, but the local were concentrated, and though the inflammatory redness and œdema disappeared after one week an unabsorbed fluctuating mass containing about 1 c.c. remained during three weeks. It showed in pipetting off some sero-pus mainly intact phagocytes, little débris, no microbes to the microscope; however, a few colonies of the strain injected grew on culture media.

[*Note.*—By contrast two other subjects, who had previously received at eight days' interval doses of 250 and 500 million heated bac. para. B (a.) or B (w.), bore much better a subsequent third dose of 250 million of the similarly sensitised living B (a.) or B (w.)—i.e., twice the quantity given to those above described. Though there was never fluctuation to be felt at the site, the local inflammation remained 14 days before entire disappearance.]

Conclusion.—There was not sufficient attenuation of the bacilli by sensitisation with the employed human or rabbit specific sera to continue their employment in such doses. It is to be recalled that these two strains are the most virulent of seven strains of the paratyphoid group B studied.

With the strains of paratyphoid A and typhoid the giving of sensitised living bacilli in certain doses in the following experiment is shown to be without any inconvenience. (Table IX.)

TABLE IX.

Groups of subjects.	Dec. 17th, 1912.	Dec. 28th, 1912.	Jan. 4th, 1913.
1, 2, and 3	250m. P A sensitised by rabbit serum in 1 c.c.	500 m. of same in 1 c.c.	750 m. of same in 1½ c.c. saline.
4, 5, and 6	Same as above sensitised by human serum.	500 m. of same	750 m. of same in 1½ c.c. saline.
7, 8, and 9	250 m. T. sensitised by horse serum.	500 m. of same	750 m. of same.
10, 11, and 12	250 m. T. (v.) sensitised by human serum.	500 m. of same	750 m. of same.

Reactions.—To P.A.—A slight general reaction with rise of temperature followed each injection. Highest temperature (rectal), 38 8° C., was the morning after the third dose. Locally very slight reactions followed each dose. In three subjects the second dose took one week to disappear completely. The two methods of sensitising seemed to give comparable reactions.

To T. and T. (v.).—The T. (v.) was a recently isolated and very virulent strain; the T. was an old laboratory culture and the one used in my original applications of vaccination by sensitised bacilli typhosi. The general and local reactions were comparable to those following P.A. The temperature of two subjects who had T. rose to above 39° C. after the second dose, and one subject who had T. (v.) had a temperature over 39° C. after the first and second dose. The third dose was well borne by all. There was no difference in reaction between the recently isolated and old laboratory strain. In fact, in other work I have seen similar results. Locally the reactions were very slightly more than those following P.A.

The impression gained was that the bacilli P.A and T. or T.(v.) gave rise to local reactions much less marked than those to paratyphosi B(a.) and B(w.), and that they may be given in these doses living and sensitised by either the animal sera used or by human immune serum. As noted in my earlier publications, specific amboceptors were not determined in the sera taken after two doses of sensitised bacilli typhosi, and agglutination when present was always very slight. The sera of the subjects having only sensitised bacilli B(a.) and B(w.), withdrawn eight days after the second injection, were also negative, and there was no agglutination in dilutions above 1 : 10. A week after the third injection the serum, 0·2 c.c., of one subject who had P.A showed only partial fixation of complement with the specific antigen, but did not cause agglutination. Another serum was negative, but had an agglutination titre of 1 : 60. Sera after the third dose of bacilli T. or T(v.) each gave a very slight fixation with 0·2 c.c. with either strain as antigen. There was little agglutination. I may add that sera taken after two similar doses of dead and unsensitised bacilli T. or P.A or P.B

[3] Royal Army Medical Corps Journal, September, 1913.

showed with 0·2 c.c. fixation of complement on to their respective antigen and agglutinated macroscopically their strains infected in dilutions of 1 : 125.

Series 4a.

The reactions in five subjects who received sensitised unheated living bacilli P.A at a higher dose than 750 million show that the virulence of this strain of P.A does not justify a general utilisation of such high doses. Further, 5 female subjects who had 500 and 1000 million heated bacilli P.A in two previous injections and showed definite specific anticorps in their sera very slowly absorbed the injection, given eight days later, of 1000 million P.A sensitised and living unheated. In virulence as judged by subcutaneous injection the P.A lies midway between the bacilli typhosi and paratyphosi B (a.) and B (w.). 1000 million sensitised living bacilli typhosi are in my experience absorbed after a few days.

In utilising the observations heretofore made and facts determined, the following double method has been devised, and its application with all strains has given satisfactory results as judged from clinical and practical standpoints. Making use of the principle first applied by Castellani, I have added to sensitisation the part attenuation of the micro-organisms by heat. Before giving the results it should be repeated that the paratyphosi BL_1, BL_2, and BM are less virulent than B (a.) and B (w.), as the application to man has shown. For convenience of space the subjects will be taken in groups. All cited are from Dr. Legrain's service and are female asylum patients.

Seven cases, of ages varying from 18 to 49 years, received at intervals of 7 to 9 days, 250 million and 1000 million dead heated (53° C. one hour) P. A; then 1000 million living heated (50° C. one hour) bacilli sensitised by serum from the same group taken one week after the second injection. Local reaction was most apparent after the first injection, but in no instance marked or necessitating repose from usual occupations. Two had a rise of temperature (rectal) to 39° C.—one after first and third dose, the other after second dose. It fell each time to below 38° C in 12 hours. One patient who had had typhoid fever at 11 years of age showed a temperature chart markedly different from the others, as the temperature rose to 38·8° C. after each injection.

Fifty-five subjects received by the same procedure bacilli P. B (a.) (12), or B (w.) (10), or BL_1 (5), BL_2 (6), BM (10), B. enteritidis (Gaertner) (6), B. murium (Danysz) (5), (this latter of extreme virulence for the rat and mouse) in doses of 250 and 750 millions dead heated at 56° C. one hour, and 750 million living heated (53° C. one hour) and sensitised by the withdrawn human antiserum. If a subject shows himself of general hypersensibility to the first dose, which is rare, the two later should be one-third of the above quantities.

Reactions.—Local.—It was found better and equally practical to divide up doses that only 250 million be injected at one place. The reactions were in all cases slight and passed in three to four days.

General.—Temporary malaise was rare. The temperature (rectal) rose slightly in practically all after each injection. The three highest recorded—39·5° C., 39·4° C., and 38·8° C. —were very transitory and followed the first injection of B. enteritidis and the second injection of para. B (w.). Subjects who had had typhoid fever previously, or were in the first or second stage of tuberculosis, showed no variation from the average by their local and general reaction and no determinable activation of the affected areas in the latter groups of subjects. It is to be noted that to some subjects a hot compress was applied at the sites of injections.

A typical protocol of the serological findings from the many examinations done is appended. (Tables X. and XI.) The increase of the numbers of injections showed a corresponding rise in properties of the sera acting upon the specific, and extending often to other related antigen strains. Certain strains, notably para. BM, gave rise to a more extended amboceptor production than others. The agglutinating power of sera did not bear relation to their amboceptor contents. It showed throughout the many examinations a more marked specificity. The P.A gave rise to serum properties which will be seen to define it from the B group. It, also, like many strains of P.A, tended strongly to resist agglutination. For some unaccountable reason the laboratory culture, despite variation in the media, became entirely resistant. The culture from a slowly absorbing exudate following its injection in too high a dose in the earlier series was found by chance to be agglutinable.

The complement-fixation tests were carried out in titrating complement with sheep globules and antisheep rabbits' serum to complete hæmolysis in half an hour at 37° C., and taking twice that quantity. The antigen was then titrated with this quantity of complement, and the quantity which permitted complete hæmolysis employed. Sera were first inactivated and then tested for amboceptors for sheep's globules. If hæmolysis was produced at dose of 0·2 c.c. when in presence of titrated complement and sheep globules, it was found advisable not to use such sera in fixation tests, or they were employed only in very small doses—e.g., serum of L_2. All necessary control tubes were made up and examined at the same time.

A. After dead unsensitised micro-organisms when the sera were used for sensitising and preparing the bacilli for further injections.

TABLE X.

Sera.		Antigens. B (w.).	T.	P.A.	B (a.).	BL_1.	BL_2.	BM.	B. enteritidis.	T. (v.).	T.c.	T.r.	T.k.	B. murium
P.A ...	0·1	–	+	–	–	–	–	–						
	0·2	–	+	±	±	±	–	–						
P.B (w.)	0·1	–	–	–	–	–	–	–						
	0·2	–	±	±	±	±	–	–						
P.B (a.)	0·1	–	–	+	–	–	–	0						
	0·2	–	–	+	±	±	±	0						
$P.BL_1$ ...	0·1	–	–	+	+	+	+	–	–					
	0·2	+	+	+	+	+	+	–	–					
$P.BL_2$ ...	0·05	–	–	–	–	+	–	–	–					
P.BM ...	0·05	+	–	+	+	–	+	–	±	±	?	?	0	
	0·1	+	+	+	+	+	+	–	+	+	+	+	+	
	0·2	+	+	+	+	+	+	±	+	+	+	+	+	
Normal human sera all negative in these quantities.														
After dead and sensitised living bacilli.														
P.B (w.)	0·1	–	–	±	–	–	–	–	–					
	0·2	±	±	+	±	±	±	–	±					

The further injections of living sensitised bacilli did tend to increase the detectable amboceptor production as here shown with P.B (w.) serum. It is to be noted that P.B (w.) as an antigen does not produce strong complement-binding properties, though marked agglutination is always determined in the serum.

B. Agglutination after dead unsensitised micro-organisms. The bacilli typhosi, B. murium, and B. enteritidis were only agglutinated by their respective serums, save in low dilutions, after 12 hours. Suffice it to say for P.A serum, that it agglutinated its new culture strain, but no strain of T. or P.B. Conversely, none of the sera examined during this work, other than P.A sera, agglutinated the P.A bacilli. After two injections of dead micro-organisms P.A the agglutination titre was 1 : 200 slight, 1 : 100+, time three hours at 37° C. After further injections of sensitised living the titre was still only very slight in 1 : 200, even after 12 hours at 37° C. L_2 was partially agglutinated in 0·85 saline and was not employed in these tests.

TABLE XI.

Strains after 1 hr.	B (a.) 18 hrs. 37° C.	B (w.). 1 hr.	B (w.). 18 hrs.	BL_1. 1 hr.	BL_1. 18 hrs.	B.M. 1 hr.	B.M. 18 hrs.
B (a.)... 1 : 50+	1 : 250	0	1 : 50 slight.	1 : 10	1 : 250	0	1 : 10
B (w.) 1 : 10	1 : 50	1 : 100	1 : 250+	1 : 50+	1 : 250	1 : 10	1 : 100 slight.
BL_1 ... 1 : 10 slight.	1 : 50 slight.	1 : 250	1 : 250+	1 : 250	1 : 250+	1 : 50 slight.	1 : 250
BL_2 ... 1 : 10 slight.	1 : 10	1 : 100 slight.	1 : 100	1 : 10	1 : 100	0	1 : 2·0 slight.
BM ... 1 : 10	1 : 10	1 : 100	1 : 250	1 : 100 slight.	1 : 100 slight.	1 : 50	1 : 200 slight

The agglutination titre was slightly raised by the further injection of living sensitised agglutinated bacilli following upon the two injections of dead unsensitised bacilli.

The repeated examination of stools sometimes made after a purge has been given, blood and centrifuged urine failed in all cases to reveal the presence of the organism inoculated.

A number of subjects who had been vaccinated some months previously against typhoid fever were injected with one or other of these various strains of paratyphoid B. The reactions were similar to those who had not been so vaccinated. I may here add, however, that it has been my experience to find that if one waits so long between a first and second, or second and third injection of the same antigen, a certain part of the modifying influence from earlier dose or doses as judged by reactions has passed off, and the nearer we approach the last series of injections the less the reactions to the second series of injections of the same or a related strain.

These later results have been most gratifying, and it appears that one can by this method prepare and commence immediately the injections of any specific micro-organisms of this group causing an epidemic. Those injected do not suffer from painful reactions. The initial small dose determines a very endotoxic strain; also, the rare hypersensitive patient. The assured sensitisation by a specific antiserum and attenuation by heat permit the giving of living organisms. I have avoided the use of the word vaccine, as time alone can show the value of paratyphoid bacilli inoculations, such as has been shown with the typhoid bacilli. Certain specific properties present in the sera of patients injected have been determined, and those that appear interesting described. In THE LANCET [4] I have dealt with this question. Throughout the three years of study on the subject of typhoid and paratyphoid vaccination I have followed the suggestion kindly given me by Lieutenant-Colonel Sir William Leishman, and have injected a number of inmates in each section, the remainder serving as controls. All remain under observation from year to year. Such a basis for statistics has proved most useful this year when in the service of Dr. Llwoff, where the first series of subjects were vaccinated in 1912 with the living sensitised typhoid bacilli; there were 14 cases of typhoid amongst the non-vaccinated and none amongst the vaccinated, 10 per cent. of all.

The use of human sera and therapeutic results on animals will be discussed later. I have used specific human sera in the sensitisation of many and varied micro-organisms for a very long period and have seen no contra-indications to their use. The risk of transferring disease can be eliminated by care, or if desired the patient's own serum may be employed. This is very advantageous in treatment of chronic conditions.[5] When trying the therapeutic action of sera certain results were judged on subcutaneous abscesses. Mayer and Linser, Spiethof and Revaut have employed human blood or sera in skin diseases. The last considers a stimulation of phagocytic defence is produced.

A year ago, in collaboration with Dr. Lagane, of the Pasteur Hospital, we injected autogenous B. typhosi sensitised by tested sera taken from convalescents in their fourth or fifth week. One severe case of typhoid fever, "forme adynamique," with pulmonary complications, and whose life was despaired of, bore such vaccines well, and they may have greatly aided in her recovery. Doses were given subcutaneously, the initial being 250 million, increased and repeated daily for three days. With Lieut.-Col. Robinson I have employed the serum treated Para BM in the treatment of a case of paratyphoid B infection with definitely good results.

When in one of the early series four patients had small localised infiltrations following the bacillary injections, each received 10 c.c. of the heated serum of one of four others who had been injected with the same strain of micro-organisms. To two more, both having a small infiltration also due to paratyphosus B (a.), I gave 10 c.c. of serum from two subjects who had received T. and P.A injections respectively. The curative action on the inflamed area was very slight, though it appeared to diminish more quickly than in two patients who had received no serum and who served thus as controls. No distinction of results could be made between those who had received specific and non-specific antisera. One patient's reaction was interesting. Ten minutes after a hot compress had been applied to the infiltration on the evening of a specific antiserum injection, the region where the serum was injected became red and painful, to pass off by the morning. No reactions followed the injections of human sera. These doses in serum therapy may be considered small. As, however, Chantemesse has found even small doses of anti-typhoid horse serum lead to marked reactions, sudden enlargement of the spleen, Peyer's patches, and glands, this caution was indicated.

The question of paratyphoid injections on the extensive scale to which typhoid injections have reached has been considered. Professor Vincent made certain experiments, and recently Major Cummins has published [6] his results on a series of men. The apparent failure of B. typhosi injections against B. paratyphosi A and B, as judged from results quoted earlier, makes the question of practical interest. Infections with a strain of the group of paratyphoid B (including B. Gaertner and B. murium) appear to be of too rare occurrence to need the application of an extended scheme of injections, while the marked variability in virulence and variety in the groups and of their toxins fills the study of such a possible means of prevention with difficulties. We are, I think, led to give our attention to prophylaxis, also to treatment and vaccination by early injections of the isolated strain when sporadic or epidemic cases appear. The double method described permits of such procedure. It would be extremely valuable to find in the typhoid-paratyphoid group a strain which as antigen would create an immunity against the strains of this numerous group. In this direction the interesting serological results of the sera from the subjects who received the strain paratyphoid BM, which have fixed complement on to and shown opsonins for all the strains of B. typhosus, paratyphosus B, B. enteritidis, B. murium, and paratyphosus A, employed as antigens, have encouraged experiments into the anti-endotoxic properties of the sera, and into the value of this strain to protect against infection by all these allied strains. The serum-treated bacilli will also be tried for vaccination,[7] also continued in treatment as in case above.

To meet a possible criticism that I have not made known any experiments on animals prior to the application of the methods to man, such were undertaken. (One avoids encumbering the literature with indefinite results.) The difficulties attendant thereon were apparent. For some long time I have enjoyed the exceptional advantage of following the researches

[4] THE LANCET, August 24th, 1912, p. 504.
[5] Brit. Med. Jour., 1914.
[6] Royal Army Medical Corps Journal, September, 1913.
[7] Brit. Med. Jour., August 8th, 1914.

of Besredka, also those of Skrzynski in Danysz's laboratory. They have for some years been essaying endless methods and routes to vaccinate the mouse, which, as is known, takes the disease with certain strains and has similar findings on autopsy as man. However, there is no means of testing local reactions, as there follows no persisting infiltration formed in the subcutaneous tissue as occurs with high doses or not sufficiently attenuated bacilli in man. With another race of animal, the rabbit, on which I was testing virulence, the slowness of absorption to a subcutaneous injection of dead or living bacilli was a most noteworthy point. We have tried the sera of subjects inoculated with sensitised vaccines on mice by injecting it and then giving a virulent passage strain of paratyphosus B under the skin. It gave more protection than normal sera. Skrzynski has experimentally proved and Bassich[8] has recently published that mice may be vaccinated by subcutaneous inoculations against certain lethal doses given subcutaneously, but it is not yet shown that such injections protect mice against a strain that is infective by the mouth. These few experiments out of many may be quoted. They demonstrate the difficulties and present impossibility of gaining much useful information from experiments with the paratyphoid B strains on animals. One most useful indication gained was that the mouse supports a higher dose of sensitised than non-sensitised bacilli—a result seen also in man.

It was necessary to proceed with the greatest prudence and be guided by clinical observations, just as when after the brilliant researches of Professor Metchnikoff and Besredka on the chimpanzee with sensitised B. typhosi I determined the doses applicable in prophylaxis and treatment in man. All subjects treated have remained in a condition of health similar to that prior to the injections. I wish to express my deep sense of gratitude and appreciation to Dr. Roux, also to Professor Metchnikoff and Professor Besredka, in whose service I have enjoyed the inestimable honour and advantage of carrying out the laboratory experiments, and to Dr. Marie and Dr. Legrain for their much esteemed clinical collaboration.

Queen Alexandra Military Hospital, Millbank, S.W.

[8] Société de Biologie, 1914.

UNIVERSITY OF SHEFFIELD.—Dr. J. B. Leathes (professor of pathological chemistry in the University of Toronto) has been appointed professor of physiology in the place of Dr. J. S. Macdonald, who has accepted the chair of physiology in the University of Liverpool.—Dr. Harold Scurfield, medical officer of health of the city of Sheffield, has accepted the invitation of the council to become professor of public health in the university.

PROPOSED TUBERCULOSIS DISPENSARY FOR TORQUAY.—The Local Government Board has approved of the scheme proposed by the Devon county council of purchasing a villa, "Larchmont," for the provision of a tuberculosis dispensary in Torquay. The Torquay town council and the residents, including several medical men, opposed the scheme, and considerable regret is felt locally at the decision of the Local Government Board.

THE BEIT MEMORIAL FELLOWSHIPS FOR MEDICAL RESEARCH.—Notice is being given by advertisement that the sixth election of Fellows will take place on or before Jan. 1st, 1915. Applications must be received on or before Oct. 15th, 1914. Forms of application and all information may be obtained by letter only, addressed to the Honorary Secretary, Beit Memorial Fellowships for Medical Research, 35, Clarges-street, Piccadilly, London, W.

Reviews and Notices of Books.

Nouveau Traité de Pathologie Générale.

Publié par CH. BOUCHARD, Professeur Honoraire de Pathologie Générale à la Faculté de Médecine; G. H. ROGER, Professeur de Pathologie Expérimentale à la Faculté de Médecine, Médecin de l'Hôtel-Dieu. Tome II. Rédigé par MM. F. BESANÇON, E. BODIN, J. COURMONT et A. ROCHAIX, J. GUIART, H. ROGER, P. TEISSIER. Paris: Masson et Cie. 1914. Pp. 1174. Price 28 francs.

THE first volume of this comprehensive work on general pathology was reviewed in THE LANCET of Oct. 26th, 1912. When complete it will extend to four large and bulky volumes. Somewhat less than one-half of the entire text, nearly 500 pages, is required for the elaborate treatise of Professor H. Roger on Intoxications and Auto-intoxications. No better expositor of this subject could have been found. Professor Roger subdivides his subject as follows: (1) General considerations on intoxications; (2) the sources of intoxication; (3) auto-intoxications; and (4) actions of poisons on the organism. On reading this contribution one is surprised at the enormous mass of facts which the author has marshalled in orderly array. It is a compendious treatise in which searchers after facts may dig for details with a certainty of finding them. The author takes a wide view of his subject. Poisons are classified as endogenous and exogenous; the channels by which poisons enter the body are next considered. Absorption through the digestive, respiratory, urinary, genital, and cutaneous surfaces is discussed, as well as subcutaneous absorption and absorption by pathological tissues. Intravascular injections are considered and the conditions that favour absorption, leading on to the question of "toxic doses," a subject that is treated with great detail. Then follows an elaborate account of the relation between chemical constitution and toxicity, the action of poisons on the organism, including the blood, lungs and nervous system, and the channels by which poisons are eliminated. The protective rôle of the liver is admirably portrayed.

In the second part the alimentary, putrid, and non-alimentary poisons are successively and successfully dealt with. As to alimentary poisons, those regularly present in our food are first discussed and then accidental poisonous ingredients in food. Most interesting are the author's statements respecting alcohol regarded as a food, though it must not be concluded that it is either a good or a cheap food. There is much that is new and original in the chapter on putrid poisons. Under non-alimentary poisons the following, amongst others, are discussed: pollen, tobacco, opium, morphine, cocaine and ether, and poisoning in the course of daily work, "professional or trade intoxications," and intoxications during fœtal life. This part is brought to a close by a particularly interesting account of "venins" from serpents, fishes and scorpions, the latest researches of Richet and others on sea-anemones and anaphylaxis being included. Auto-intoxications under normal and under pathological conditions are next passed in review. The toxicity of extracts of the various tissues, digestive secretions and digestive products, the poisons of the blood and urine, are all successively discussed. Amongst the pathological auto-intoxications those resulting from gastro-intestinal, hepatic, and renal incompetence are very fully

dealt with, and their significance and causes explained. Uræmia, eclampsia, affections arising from defects of the ductless glands, injuries to the skin and nervous system, and then the auto-intoxications arising from parasitic and infectious diseases, from cancer, acetonæmia, uricæmia, ammonæmia, and azoturia bring this elaborate, comprehensive, and thoughtful treatise to a close.

The contribution on the general etiology of parasitism and infection, by P. Teissier (pp. 487–678), begins with a concise and interesting history of the causes of infectious diseases, including microbes and parasites. The importance of animal parasites—e.g., certain protozoa—as disease-producers is fully emphasised, as well as of the parasites belonging to the vegetable kingdom—i.e., zoo-parasites and phytoparasites. The viruses which are invisible to the microscope, but which can pass through certain filters, are dealt with in detail. The pathogenic properties—vitality, virulence, modes of parasitic life, the physical and chemical conditions which favour or retard their growth and development, the influence of light, electricity, dryness, oxygen, ozone, and the variability of resistance of pathogenic germs—are passed in review. After a consideration of the habitats of microbes (air, soil, water), their foods and means of transport, the larger animals are discussed as reservoirs of microbial or parasitic diseases, a caution being given as to the dangers in this connexion associated with domestic animals. Lastly, man himself as an agent de propagation is dealt with under the titles of: (1) hetero-infection, (2) hetero-contagion, and (3) auto-infection. The adjuvant and predisposing causes of parasitism and infection are next discussed. The article terminates with a most interesting historical and practical account of epidemic diseases.

F. Bezançon gives in 100 pages a straightforward practical, and clear account of "les bactéries." First a general summary is given of their form, size, structure, granulations, metachromatic corpuscles, pigments, mobility, reproduction, chemical composition and nutrition, and the products of microbial life, and, lastly, of the operations by means of which the species may be diagnosed—including inoculation in animals. The main part of this memoir is taken up with a description of the general characters of the principal species of pathological microbes in man under the following heads: (1) coccaceæ, (2) bacteriaceæ, (3) aerobes and anaerobes, (4) spirillaceæ, (5) corynebacterium, and (6) acid-resisting bacilli.

E. Bodin writes clearly of the parasitic fungi in man. The memoir is well illustrated, and it deals in an attractive way with a subject which is apt to be neglected. To Jules Guiart is entrusted the biology and pathogenic rôle of animal parasites, one of the most interesting chapters in the book. We most heartily commend its intimate study to the zoologists as well as to the pathologists. A most excellent, well illustrated monograph.

To J. Courmont and A. Rochaix about 200 pages are assigned, in which they discuss and elaborate infectious disease under the following headings. The acute virulent attack, the channels of entry, and the virulent agents themselves, first line of defence at the port of entry; the second line of defence—phagocytosis and the bactericidal power of the "humours," causes which favour infection; third line of defence—general reactions of the organism, and the special reactions of organs and tissues.

We offer hearty congratulations to the various authors for the compendious, practical, and readable account of the subjects dealt with in a book that should find a place in every medical library.

Traité de Chirurgie d'Urgence.

Par FÉLIX LEJARS, Professeur à la Faculté de Médecine de Paris, Chirurgien de l'Hôpital Saint-Antoine, &c. Septième Édition, revue et augmentée. 1086 figures, dont 729 dessinées par le Docteur E. DALEINE et A. LEUBA, et 198 photographies originales; 20 planches hors texte. Paris: Masson et Cie. 1913. Pp. 1167. Price 30 francs.

THIS work is so well known and has passed through so many editions that it would be hard to say anything about it that is not already known to the medical profession. The new edition has been brought up to date and represents present-day surgery, especially of the French school. The additions are five new chapters on acute dilatation of the stomach, the surgical treatment of acute pancreatitis, obliteration of the mesenteric vessels, sigmoiditis, and the dislocations of the pelvis. In discussing acute dilatation of the stomach the author relates an interesting case in which this condition occurred in a woman, 58 years of age, after a supravaginal hysterectomy. Great benefit resulted from placing the patient in the ventral position; ultimately, however, she died from toxæmia. The author considers that in this case the acute dilatation was brought about by the swallowing of air, mixed with saliva, and he attributes it to the excessive quantity of saliva secreted as a result of the anæsthetic. The gastric mucous membrane is irritated and secretes mucus copiously, while the distention of the stomach with saliva and mucus causes kinking at its orifices, and so the distension becomes still more marked. For the treatment he advises the ventral decubitus and the passage of a stomach tube.

The account of acute pancreatitis and its treatment is very clearly written, and an interesting description of the obliteration of mesenteric vessels is given. There are also 92 fresh illustrations. Since we reviewed the last edition[1] an English translation has appeared.

The Newer Physiology in Surgical and General Practice.

By A. RENDLE SHORT, M.D., B.S., B.Sc. Lond., F.R.C.S. Eng., Hunterian Professor, Royal College of Surgeons; Examiner in Physiology for the F.R.C.S., &c. Third edition, revised and enlarged. Bristol: John Wright and Sons, Limited; London: Simpkin, Marshall, Hamilton, Kent, and Co., Limited; Toronto: The Macmillan Company of Canada, Limited. 1914. Pp. 256. Price 5s. net.

IN reviewing the first issue of this work in THE LANCET of June 8th, 1912, p. 1541, we described its contents, pointing out its great value for practitioners and expressing the hope that it might appear in a second edition in which yet other applications of recent physiology to surgical problems might be described. This hope was fulfilled in a very few months, for in THE LANCET of August 10th of the same year, p. 370, we had to renew our commendation of a second edition, containing considerable extensions, a new chapter, and the introduction of several new subjects.

It will be seen that in the title of the present

[1] THE LANCET, May 28th, 1910

(the third) edition the word "new" has been changed to "newer," suggesting a further increase in scope. On perusal we find this to be the case. New chapters are introduced on the vitamines and the genital glands, while the chapters on surgical shock, the pituitary and pineal glands, and on digestion have been to a great extent rewritten. The opening chapter on vitamines discusses their relationship to deficiency diseases, and gives a neat summary of our knowledge upon this subject so far as it has been advanced, but, as the author is careful to point out, "we must wait for further observations before deciding whether the pathology of the disease (e.g., rickets) is simply fat starvation, or whether the patients have been deprived of a necessary vitamine." Important additions have also been made in the chapters on the thyroid and the spinal cord. The importance of an acquaintance with our newer knowledge of the physiology of the thyroid and its functions to the general practitioner, as explaining many formerly obscure clinical conditions, is obvious. The chapter on surgical shock is excellent. The theory of Crile and Mummery, the acapnia theory, the oligæmia theory, and the theory of suprarenal exhaustion are explained, and in connexion with the last named the author's "adrenalinscope," which it is claimed will show appreciable evidence of the presence of even 1 in 500 million of adrenalin (Parke, Davis), is described. The author himself leans to the view that surgical shock is brought about by nociceptive impulses inhibiting or paralysing the important nuclei in the region of the fourth ventricle, and perhaps in the cerebellum, which, as Sherrington and others have shown, are continually sending impulses down the spinal cord, maintaining its functional activity and increasing muscular tone. With inhibition of these impulses tone is abolished and blood pressure may fall. The respiratory centre, and even the vasomotor centre, may share in this inhibition.

Great as was the value of the book at its first issue, it is now indispensable to the general practitioner who wishes to keep himself versed in the rapidly augmenting area of physiological knowledge ready to be applied in medicine. Evidence of the author's practical acquaintance with his subject from experimental investigation is plentiful in the book.

Natural Therapy: a Manual of Physio-therapeutics and Climatology.

By THOMAS D. LUKE, M.D. R.U.I., F.R.C.S. Edin., Medical Superintendent, Peebles Hydropathic, N.B., and NORMAN HAY FORBES, F.R.C.S. Edin., F.R.S. Edin. Bristol: John Wright and Sons, Limited. Pp. 316. Price 5*s*.

WE have already commented on the nature and scope of this book which gives a good description of the various methods and appliances necessary for the numerous processes which may be carried out at recognised spas or in private houses or institutions.

Mr. Forbes's remarks on medical climatology and the principles of climatic treatment are brief but practical. He suggests certain "golden rules" which he rightly thinks will be of use to the busy practitioner. We agree that it is a matter for regret that there is no systematic teaching of medical climatology in this country, and yet medical men are being constantly asked to recommend climatic resorts to their patients. The hints and suggestions offered by Mr. Forbes are well worth consideration. It is satisfactory to note that considerable attention is paid to British resorts, more especially as under existing conditions a very large proportion of the continental ones are out of the question.

On again perusing this volume we can express the favourable opinion we previously formed.

On Dreams.

By Prof. Dr. SIGMUND FREUD. Authorised English translation by M. D. EDER. With an introduction by W. LESLIE MACKENZIE, M.D. Aberd., LL.D. London: William Heinemann. 1914. Pp. 110. Price 3*s*. 6*d*. net.

Dr. Eder is to be congratulated on his excellent translation of Professor Freud's small explanatory volume on his theory of dreams. In view of the complicated terminology of the original we are the more grateful to the translator that we are not every now and then pulled up by a too literal rendering of a German idiom or by an unwonted scientific expression. For new ideas in psychology we suppose a new terminology is requisite, but at least it should conform with accepted methods of word-formation and usage. In this connexion we do no more than justice to Dr. Eder when we say that we think his translation is superior to others of Freud's books that have appeared in this country.

The essay itself is purely expository and explanatory; it contains a succinct account of the Freudian hypothesis of dream construction, with its condensation, displacement, dramatisation, and so on. A selection of picked dreams is given to exemplify these hypothetical processes. The reader will meet in this little book with reassertions of the now no doubt familiar tenets that dreams are the concealed realisations of repressed desires; that most of the dreams of adults can be traced by analysis to erotic desires; that repressed infantile sex desires form the most frequent and the most powerful impulses for the formation of dreams; that the dream is the guardian of sleep. Professor Freud has outlined his position in these pages quite clearly, and while he disclaims pretension to have dealt with all the problems of the dream, he has nevertheless furnished the reader with a very fairly comprehensive account of his views. To those who merely seek information, therefore, the book will be welcome. Whether Professor Freud carries conviction in his statements need not be discussed here.

LIBRARY TABLE.

Materia Medica for Nurses. By A. S. BLUMGARTEN, M.D., Instructor in Materia Medica at the German Hospital Training School for Nurses. New York: The Macmillan Company. 1914. Pp. 644. Price 10*s*. 6*d*. net.—Looking at the fulness of this text-book and its 644 pages, one asks oneself why the words "for nurses" form part of the title. In the preface attention is drawn to the replacement of technical terms, when they are not in common use, the teaching of facts rather than words, and a progressive procedure from the known to the unknown, as characteristics of the book that render it suitable to its professed purpose. So much normal physiology as is necessary to a clear understanding of drug action is incorporated. Little attention is paid to therapeutics, as it is the nurse's duty not to treat disease but to administer medicines and observe their effects. We think the book contains a great deal too much for those for whom it is expressly intended—at any rate, until they have

attained to such a standard of experience and proficiency that they might read the ordinary text-books on the subject with advantage. For medical students, and even for general practitioners, it contains much that might be of service both in subject matter and method. It needs careful editing, however. We have noted a number of mistakes—oleoresinæ as a nominative singular; rheii, once misprinted pheii, for rhei (p. 105); phenolphtalein for phenolphthalein; ichthosulphonas for ichthyosulphonas; aspirosperminal for aspidosperminal; and so on. Aspirin, though mentioned under salicylic acid, is not indexed. Numerous trade preparations are introduced. Finally, we emphatically protest against the statement on p. 417 that veronal is "a very safe drug."

Collected Papers by the Staff of St. Mary's Hospital, Mayo Clinic, Rochester, Minnesota, for the year 1913. London and Philadelphia: W. B. Saunders Company. 1914. Pp. 819. Price 24s. net.—We welcome another volume of the collected papers coming from the Mayo Clinic. The size of the volume is an indication of the activity of this surgical centre, which has won a world-wide recognition. The writers are 28 in number, and there are 78 papers in all. These deal with nearly the whole arena of surgical practice, but especially with the alimentary canal, though another important section is that devoted to studies of the thyroid gland. Among the 15 papers on this subject we may mention one by Dr. Charles H. Mayo, based on the 5000 operations on the thyroid which have been performed at the Mayo Clinic during 25 years. It is of interest to note that the 5000 cases were almost equally divided between simple goitres and exophthalmic goitres.

Exercises for Women, with Illustrated Details of Mat Exercises. By FLORENCE BOLTON, A.B., Stanford University, Director of Women's Gymnasium, Stanford University. New York and London: Funk and Wagnalls Company. 1914. Pp. 141. Price 4s. net.—The first few chapters of this useful book concern the bodily mechanism, and deal with such exercises, and certain conditions which the exercises are intended to meet, as have occurred most frequently in the course of a long practical experience in gymnastic work and physical examination. The first chapter contains some interesting and helpful remarks concerning the importance of deep breathing for women, the bad results of pelvic congestion, more particularly as regards the menstrual periods, and the proper and improper use of the feet in walking. In the second chapter the important question of clothes and shoes is considered, and in the third are some general remarks *re* the proper place and the proper manner in which exercises should be employed. The next three chapters deal with a complete series of mat exercises suitable for women, and in an appendix these are tabulated for the use of teachers. A very useful and clearly written work of its kind.

The Backward Child. By BARBARA SPOFFORD MORGAN. London and New York: G. P. Putnam's Sons. 1914. Pp. 263. Price 5s. net.—The experience of school administrators has proved that the problem of retardation in children is distinct from that of the detection and correction of physical defects. The typical backward child may or may not be healthy; his mental deficiency or aberration is not of the kind or degree which demands institutional treatment. On the other hand, unless the nature of his abnormality be discovered and specially dealt with he will not be able to obtain the full advantage of the ordinary curriculum. Mrs. Morgan describes in clear and untechnical terms the system by which she tests the senses and faculties of backward children, and the types of special training which, in her experience, have proved successful in removing the obstacles to normal development. In comparison with the elaborate investigations described, e.g., in Schulze's work, Mrs. Morgan's method is simplicity itself, no apparatus being required beyond a few pictures, a box of letters, an assortment of coloured worsteds, and so forth. The tests themselves are so clearly described that any intelligent teacher, granted a certain psychological acumen, might apply them, but there seems no doubt that they would suffice to effect at least a provisional diagnosis and classification of the commonest forms of retardation. They provide for the qualitative appraisement of the various forms of sensibility. A point dealt with in more than one section is the advantage which may be taken of idiosyncrasies in the furtherance of general development. Thus a child who could not learn to read, having been found to be "ear-minded," was taught the alphabet by being encouraged to play tunes on a piano on the white keys of which the letters had been printed. "As a matter of practical experiment," says the authoress, "backward children can be brought up to a normal average in their lessons by half an hour's daily individual training. The person in charge of the training may even be inexperienced, provided only the diagnosis has been made by a competent examiner, and the directions given by her for training are clear-cut and specific." Apart from the undoubted interest and value of the work upon which it is based, Mrs. Morgan's little book deserves commendation for the ease and lucidity of its style. It should receive the serious attention of all who are interested in educational matters.

MISCELLANEOUS VOLUMES.

Florence Nightingale to her Nurses (London: Macmillan and Co., Limited. 1914. Price 1s. net. Pp. 147) is a little volume made up of a selection from Miss Nightingale's addresses to probationers and nurses of the Nightingale School at St. Thomas's Hospital. They are altogether admirable. Written for women working in the world, and a very real and hard world at that, they dwell on the spiritual side of work, and yet are illuminated with that sound common sense which has always been a characteristic of the great saints, such, for instance, as St. Bernard and St. Francis Xavier. It would make an excellent text-book for the thousands of willing, yet untrained and professionally ignorant women, who at this time are offering themselves for nursing work, with a very slight idea of the difficulties and responsibilities of the calling.

The *Proceedings* have been published of the Fifth Annual Conference of the British Hospitals Association, which was held at Newcastle-on-Tyne from June 18th to 20th, 1914 (London: Scientific Press, Limited. Pp. 94). They contain besides the address of welcome by the Lord Mayor of Newcastle, papers by Dr. G. H. Hume on the Voluntary Hospital on its Trial; by Councillor Herbert Shaw, of Newcastle-on-Tyne, on the Voluntary Hospitals in Relation to Social Service Work; by P. J. Michelli, C.M.G., on Pensions for Hospital Employees; by William Straker, corresponding secretary of the Northumberland Miners' Association, on the Proposed Amendment of the Truck Acts, 1831–1896, and How it may Affect the Voluntary Hospitals; with the discussions thereon.

Four reference books claim attention. As the *Annual Charities Register and Digest*, compiled by Mr. C. S. LOCH (London: Longmans, Green and Co. 1914. Pp. 682. Price 5*s*. net) is now in its twenty-third edition, it seems unnecessary to say more than that it is a classified register of charities in or available for the metropolis, and a digest of information respecting legal and voluntary means for the prevention and relief of distress and the improvement of the condition of the poor. In addition to a review of the year's progress in organised benevolence there are articles by competent authorities on various branches of charitable work, and an introduction entitled, "How to Help Cases of Distress." An elaborate index facilitates easy reference.—*The Girls' School Year Book* (London: The Year Book Press. 1914. Pp. 665. Price 3*s*. 6*d*. net) is described as the official year book of reference of the Association of Head Mistresses. In the first part of the book the personnel of each school is given, together with fees and hours of attendance, curriculum, scholarships, and so forth, and in the second part there are articles on various openings for girls on leaving school and on matters of general interest to both parents and scholars. The right of insertion in the text of the book has been limited to public secondary girls' schools, which are distinguished from private schools by the fact of possessing a governing body.—The *London Matriculation Directory*, June, 1914 (London: W. B. Clive, The Tutorial Press, Limited, High-street, New Oxford-street, W.C. Pp. 142. Price 1*s*. net), contains much information suitable for prospective candidates for degrees at London University, in addition to the examination papers set at the June matriculation examinations, with appropriate answers. Notes on the text-books in each subject and comments on the examination papers are also given.—The list of *Medical Homes for Private Patients*, published annually by the Scientific Press, Limited, price 6*d*., affords useful information to the busy practitioner desirous of ascertaining what particular home, sanatorium, or health resort will suit a particular patient. As, however, according to the preface, "this little book is designed to be of service to both medical men and their patients," we regret to find that the list of consulting physicians, surgeons, and specialists previously adversely commented on by us still mars an otherwise commendable little book. For the profession such information is quite unnecessary; for the public it may be very misleading.

JOURNALS AND MAGAZINES.

Quarterly Journal of Experimental Physiology. Edited by E. A. SCHÄFER, W. D. HALLIBURTON, C. S. SHERRINGTON, E. H. STARLING, and A. D. WALLER. Vol. VIII., Nos. 2 and 3. London: Charles Griffin and Co., Limited. 1914. Pp. 103–302. Price 15*s*.—The Effect of Pituitary Extract on Milk Secretion in the Goat, by Reuben L. Hill and Sutherland Simpson. In 1910 it was shown by Ott and Scott that in the goat intravenous injection of pituitary causes a marked increase in the rate of milk secretion. The same result obtains in lactating cats and dogs. The authors have made more extended researches, and they find that: 1. Intravenous or subcutaneous injection of the extract obtained from four ox pituitaries produced a marked increase in the amount of mammary secretion of a goat when milked 15 minutes after injection. 2. A corresponding decrease below normal follows at the next milking several hours later. 3. As pointed out by Hammond, there is also a marked rise in fat content in the milk secreted after injection, but there is no sudden fall in the fat percentage at the next milking, as was observed by this investigator. 4. The solids, not fat, of the milk appear to be unaffected by the extract.—The Influence on Metabolism of Administration of Small Amounts of Thyroid Gland and of Anterior and of Posterior Lobe of Pituitary, by James Arthur Hewitt. Administration of fresh ox thyroid to adult white rats in daily amounts of 0·5 grm. and over to each rat causes loss of body weight *pari passu* with the amount of thyroid given. Administration of 1 grm. fresh ox thyroid diminishes the appetite and consumption of food, while 0·5 grm. fresh thyroid greatly increases it. Administration of thyroid causes retention of nitrogen, but the retention is much greater when 0·5 grm. is given than with larger amounts. Thyroid gland administered in small amounts—0·25 grm. to 0·125 grm. of fresh gland—to white rats, fed on an otherwise normal diet, produces results which differ according to the amount of gland given.—Diastolic Blood Pressure Estimations by the Auscultatory and Oscillation Methods, by G. Spencer Melvin and J. R. Murray. The authors describe their methods and the use of the Erlanger sphygmomanometer. The observations were made on healthy young adults and children. They conclude that the auditory method, checked by comparison of the tactile and auditory systolic indices, is by far the simplest and most precise method of blood pressure estimation. In healthy young adults the diastolic pressure is about 68 mm.—Changes in the Hydrogen Ion Concentration of the Blood Produced by Pulmonary Ventilation, by T. H. Milroy. The author describes the method of carrying out electrometric measurements on cats and dogs. Pulmonary ventilation with air or air and oxygen produces a rapid fall in hydrogen ion concentration, reaching its lowest level after a very short period of ventilation. Ventilation with gas mixtures rich in CO_2 leads to a rise in (H+) instead of a fall. Very probably the activity of the respiratory centre is largely dependent upon the hydrogen ion concentration of the blood.—Studies in the Physiology of the Nervous System, XX., Rhythmic Movements as Immediate Reflex Phenomena of Compound Stimulation; and XXI., Rhythmic Movements as Successive (or Terminal) Reflex Phenomena of Compound Stimulation [Progression Conditioned by Antagonistic Reflex Stimuli], by T. Graham Brown. These two elaborate papers occupy over 70 pages. A satisfactory résumé of the authors' conclusions is given in a summary.—The Pressor Bases in Normal Urine, by William Bain. Normal urine of adults contains certain bases which when injected into the blood stream of anæsthetised or pithed animals produce a marked rise of arterial pressure, and it would appear that they are either reduced in amount or absent from the urine of patients with high blood pressure. The most abundant base present is soluble in ether, and was isolated as an oxalate. After ether extraction amylic alcohol dissolves out from the residue a small amount of pressor material. It was not isolated, and its pressor effect may be preceded by a fall of blood pressure. Trimethylamine is not a pressor substance. If a pressor effect is obtained it is due to impurities in commercial specimens.—The Origin of the Active Material of the Posterior Lobe of the Pituitary Body, and the Physiological Activity of the Pars Intermedia and Pars Nervosa Compared, by P. T. Hering. The active principle or principles appear to have their origin from cells of the pars intermedia. The cells of the latter secrete a thin colloid material which finds its way into the pars nervosa, especially around the capillaries of the lobe. It cannot be said that there are separate and distinct principles which act upon uterus and mammary gland, upon blood pressure, and upon kidney. The active principle obtained from the pars intermedia and pars nervosa of the ox stimulates uterine muscle, but the pars nervosa is from two to five times more powerful than the pars intermedia in its action. A 0·5 per cent. extract of the dried pars intermedia has no specific action on blood pressure, kidney volume, or urinary secretion. A similar extract of dried pars nervosa—0·005 per cent.—injected intravenously produces a prolonged rise of blood pressure, increase of kidney volume and of urine, characteristic of the posterior lobe of the pituitary. The active material of the posterior lobe is probably a product of the epithelial cells of the pars intermedia.—Experiments on the Surviving Mammalian Intestine, by James A. Guner and S. W. F. Underhill. The authors used in essential respects the method of Magnus. They studied the survival of intestinal muscle at different temperatures, the myogenic origin of the pendulum movements, and the contractions of the muscularis mucosæ of the cat's intestine. From their observations the authors conclude that the receptive substances connected with the sympathetic nerve terminals have a greater vitality than those connected with the parasympathetic nerve terminals. The completely isolated circular muscle of the cat's small intestine can execute pendulum movements. It would seem that the rhythmicity of these movements is an inherent property of the muscle itself. Adrenine has a motor effect on the rhythmic contractions of the muscularis mucosæ, as on those of the spleen. It is suggested that adrenine when used as a styptic in gastric ulcer may help to arrest capillary hæmorrhage by contracting the muscularis mucosæ.

The Military Surgeon.—The August number of this journal opens with a long and careful paper on the Sanitary Service of Manœuvre Camps, by Major J. H. Ford, Medical Corps,

United States Army, showing the care with which medical officers are instructed in the work which has to be done; the scheme of instruction is at the close compared with that followed by the Royal Army Medical Corps.—First Lieutenant H. C. Michie tells of the development of flies in camp at Texas City. Flies develop chiefly in kitchen refuse, especially fresh meat, and in the fæces of men and animals. A cake of discarded soap was found full of young larvæ. A female lays 200 eggs; they hatch in 12 to 24 hours; the larvæ moult successively in four to six days, acquire a hard shell and become pupæ. In this stage they remain quiescent five days or so, when they turn into adult flies which are at first weak, but fly away in a few hours after emergence. Thus development takes about ten days. This process requires so much moisture as is found in garbage from 2 to 24 inches below the surface. Garbage should be all carefully and completely burned. Ants destroyed the larvæ and nymphæ very persistently, especially the nymphæ, which are found close to the surface of the garbage heap where the ants could reach them. The larvæ, who want more moisture, burrowed deeper, coming back towards the surface to pupate. In the United States camps fly traps are used, baited with fish or meat, flies are poisoned, kitchens are screened, the camp kept clean, garbage burnt as far as possible, and the residue exposed in layers no deeper than 4 inches so that it shall dry. Lime on garbage destroys larvæ, and is very useful about kitchens and in latrines.—At Vera Cruz, Mexico, the United States expedition in May and June lost only one man from disease, from bacillary dysentery. That disease is best treated with sulphate of magnesia in frequent small doses; amœbic dysentery, which has also occurred, is reported easily cured with emetine. Vera Cruz is nearly freed from mosquitoes as the result of the work of Major Noble and 200 to 400 men. 41,404 persons were vaccinated between May 18th and June 30th.—To July 19th six plague rats have been found in New Orleans of 6307 trapped. Seven human plague cases have been discovered, and a cleaning-up campaign is going forward busily.

"CHILD WELFARE" WORK IN BIRMINGHAM.

Dr. John Robertson, the medical officer of health of Birmingham, has presented an interesting special report to the town council on child welfare in the city during 1913; the conditions associated with excessive child mortality; and the new directions in which he advises that municipal action should follow in dealing with the matter. The diagrams and tables included in the report deal principally with "infant" mortality—i.e., of children under 1 year of age—and its local incidence and prevention; but Dr. Robertson actively supports the movement to extend the personal supervision of children over 1 year of age until they go to school and come under the school medical service. He urges the systematic establishment of consultation centres not only for all these children, but also for mothers in regard to ante-natal conditions, and for the purpose of instructing them in elementary cookery, the making of infants' clothes, and incidentally their education and advice in such matters as savings clubs and food values. Such "welfare stations," to serve the whole of the city, would need to be about ten in number, and would be worked as a development of the existing agencies, which already comprise three or four voluntary societies doing good work and receiving medical assistance and other aid from the corporation, and 21 health visitors working mainly in connexion with notifications received under the Notification of Births Act. It is stated that the proposed welfare stations will not interfere with the private medical practitioners in the neighbourhood, and that it might be desirable to enlist the paid services of such practitioners in carrying them on. It is not easy, however, to understand how some degree of interference with medical practitioners can be avoided. A system which involves the municipal care and medical treatment of the mother in both ante-natal and post-natal periods is not likely to go on for long without being extended to the provision of midwifery, while the municipal supervision and treatment of children, with the aid of health visitors from the local clinics, cannot logically be restricted to "minor" ailments. Dr. Robertson considers that much larger accommodation is needed for sick babies during certain periods of the year, and to begin with he advocates some special institutional provision for infants suffering from epidemic diarrhœa during the hot months of the year. In certain homes it is clear that an infant attacked by epidemic diarrhœa has little or no chance of recovery, while such children might do well in infant hospitals more or less on the lines of those frequently found in continental cities.

The information given as to infant mortality in 1913 tells the usual story of the close relation of high infantile death-rates with localities where poverty is at its deepest and housing conditions least satisfactory. In Dr. Robertson's words, "there are many conditions in the surroundings of an infant born in the central areas of a large city like Birmingham which make it very difficult for even a reasonably careful mother to rear her child without exposing it to the infection of epidemic summer diarrhœa." It may be conjectured that the great activity which has been shown in Birmingham in dealing with unwholesome environmental conditions has played a considerable part in the reduction of diarrhœa mortality in recent years, in addition to that taken by the health visiting and infant consultations. Among preventive measures in respect of infant mortality as a whole, the removal of causes of poverty is perhaps the most fundamental and the most difficult. But much may be done, particularly among the relatively prosperous artisan class, by education of mothers, advice during pregnancy, and in the various other matters which Dr. Robertson desires to see better arranged. The attack by means of such organisations on the host of infant deaths attributed to prematurity and debility is perhaps most hopefully carried on among mothers of this class. The share of syphilis in producing high infantile death-rates and high rates of stillbirth is necessarily very imperfectly shown in statistics available at present. Special welfare centres which Dr. Robertson proposes would probably need sooner or later to be closely associated with clinics or other municipal arrangements for dealing with syphilis and venereal diseases.

ROYAL MEDICAL BENEVOLENT FUND.—At the last meeting of the committee 18 cases were considered and grants amounting to £130 voted to 13 of the applicants. The following is a summary of cases relieved:—

Widow, aged 26 years, of M.R.C.S. Eng. who practised at Laindon. Left totally unprovided for with one child aged 21 months. Husband had been ill for some time before death. Friends only able to help slightly. Voted £10 in two instalments and referred to the Guild.—Daughter, aged 31 years, of M.R.C.S. Eng. who practised at Poplar and Bootle. Has endeavoured to earn her living by needlework, but her health has completely broken down. Voted £2, with leave to apply again in October, and referred to the Guild.—M.D. of Edin., aged 58. Health very bad and unable to practise. Has endeavoured to run a nursing home, but has not been successful owing to the illness of his wife and self. Three children unable to help. Voted £12 in 12 instalments through the Bexhill honorary local secretary.—Widow, aged 44 years, of M.B. Aberd. who practised at Leylands. Has endeavoured to maintain herself by letting rooms, but has been unsuccessful lately. Two children, 14 and 16, both at school. Relieved seven times, £75. Voted £12 in 12 instalments.—Daughter, aged 65 years, of M.R.C.S. Eng. who practised at Ford, near Chippenham. Health will not allow her to work. Only income 5s. per week from friends, which pays for rent. Relieved seven times, £87. Voted £12 in 12 instalments.—Daughter, aged 58, of M.R.C.S. Eng. who practised at Dorking. Health very bad, and has recently been operated on in hospital. Only income from another charity 5s. per week. Relieved twice, £20. Voted £10 in two instalments.—Daughter, aged 64, of M.R.C.S. Eng. who practised at Liverpool. Only certain income about £13 per annum. Friends help a little. Quite a confirmed invalid. Bulk of income lost through Australian bank failure. Relieved once, £12. Voted £12 in 12 instalments.—Widow, aged 57 years, of L.R.C.P. & S. Edin. who practised at Walsall. Earns a little by taking in lodgers. Brother had used to help a little until three months ago. Two daughters unable to help. Relieved eight times, £82. Voted £12 in 12 instalments.—Widow, aged 43 years, of L.R.C.P. & S. Edin. who practised at Ellesmere Port. Seven daughters, aged 4 to 17. Only income about £57 per annum. Tried to supplement income by taking in boarders, but not successfully in consequence of large family. Relieved twice, £24. Voted £12 in 12 instalments and referred to the Guild.—M.R.C.S. Eng., aged 81 years who practised at West Kensington. Now quite blind. Lost all his savings in assisting his family. Eldest son now practically blind and unable to work; lives with the father. Joint income less than £60 per annum. Relieved once, £12. Voted £2 and deferred for further investigation.—Widow, aged 57, of L.R.C.P. & S. Glasg. who practised in Ireland and London. Endeavours to earn a living by taking in boarders, but recently has not been very successful and health has been indifferent. Relieved three times, £15. Voted £10 in two instalments.—Daughter, aged 58, of M.R.C.S. Eng. who practised in London. Has no income and too ill to work. Lives with a delicate friend who has a very small pension. Relieved nine times, £94. Voted £12 in 12 instalments.—Widow, aged 64, of M.R.C.S. Eng. who practised at Ash. Health very indifferent. Five children; none able to help. Rent paid by her brother. Relieved once, £12. Voted £12 in 12 instalments.

Contributions may be sent to the honorary treasurer, Dr. Samuel West, 11, Chandos-st., Cavendish-sq., London, W.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 19, 1914.

Protection of the Food Consumer.

AT the present juncture questions of economy in food consumption have become of more than ordinary importance, and the findings of the Select Committee of the House of Commons on "Short Weight" deserve attention. This Committee, of which Sir ARCHIBALD WILLIAMSON was chairman, reported in July on the steps to be taken to protect purchasers of goods sold in packages, and buyers of bread, from short weight or measure. In regard to packages they recognise that sale by gross weight, including the tin or wrapper, is often a matter of custom and convenience with which it is undesirable to interfere. But certain practices, such as the selling of tea in wrappers or containers of unnecessarily heavy weight, are clearly to the disadvantage of the purchaser. The Committee stigmatises such practices as reprehensible, and recommends that in the case of tea, coffee, and powdered cocoa it should be illegal to sell by retail by any other system than by net weight. In the case of other articles vendors selling by gross weight should be compelled so to inform the purchaser by prominent notice, and should bear the onus of proving that the weight of the wrapper, so included, is reasonable. Many people will be surprised that it should be necessary for the Committee to make the further recommendation that short weight or measure generally in the retail sale of goods should be made a statutory offence, and that the duty of enforcing the law should rest with local authorities administering the Weights and Measures Acts. At present, it would seem, the duties of these authorities cease when they have seen that the weights, measures, and scales themselves are up to standard. A measure may be accurate, but it may be wrongly or fraudulently used; moreover, its shape and the ordinary custom of the trade may often result in the consumer getting less than the nominal quantity. Milk measures, to which the Committee draws attention, are not free from this objection.

The Committee makes special recommendations for the sale of bread, which is at present governed by two Bread Acts, those of 1822 and 1836 respectively, which are in large measure obsolete. It is recommended that "fancy bread" should be defined and exempted from official requirements as to sale by weight, but that in the case of other bread sale by weight should be strictly enforced when it is sold over the counter, and that bread sold outside the shop should be sold either in parcels of 1 lb. and multiples of 1 lb. or in loaves the minimum guaranteed weight of which is stated orally or by notice to the purchaser on delivery. A new Bread Act incorporating the administrative measures which the Committee recommends for this purpose seems to be needed. But it is to be feared that the Committee has not realised the way in which its good intentions may be defeated by methods which give the consumer plenty of weight without equivalent food value. In 1911 Dr. J. M. HAMILL reported to the Local Government Board on the use of "improvers" in flour, a use which at that date was becoming common, and which is believed to have since considerably increased. These "improvers"—principally mineral phosphates—offer to the miller and baker the advantage of increased loaf production from a given quantity of flour. The gain in production is due to the increased amount of water which the flour absorbs and to the increase in the volume of the dough resulting from the improved elasticity of the gluten. The protein content of flour is an important matter from the standpoint of nutrition, and flour from "weak" wheats, which are generally poor in gluten, contains less protein than flour from "strong" wheats which are rich in gluten. By the use of improvers flour from weak wheats, although inferior as regards protein content, is made to simulate flour from stronger wheats. A new Bread Act, limited to questions of weight, and with no reference to these modern practices, would not afford much benefit to the consumer whom it is desired to protect.

We hope that the local authorities concerned will not at the present time relax any of their normal efforts for the prevention of adulteration of food or for controlling weights and measures, or for dealing with food which is unwholesome. We have every confidence in the food traders of the country as a whole. They will not take advantage of scarcity or high prices to make fraudulent substitutions of inferior articles for articles of better class, or to get rid of stock which could not be sold without risk to health. But they as well as the public will suffer if either the authorities entrusted with the protection of the food supply, or the magistrates, allow national exigencies to be made the excuse for disregarding any breaches of the food laws at the present time. It should, in conclusion, be noted that the Select Committee strongly supports the recommendation of various witnesses that power should be given to local authorities to institute proceedings under the Merchandise Marks Act to prevent the misdescription of foods.

The King Edward VII. Welsh National Memorial Association.

THE campaign against tuberculosis in Wales is being carried out with commendable zeal by the King Edward VII. Welsh National Memorial Association, working in collaboration with the local authorities and the Insurance Committees. The second annual report of the association has just been published, and contains an interesting account

of the work which has already been accomplished and an outline of other measures which are being organised to combat the disease. The history of the movement is in brief that a national conference was held at Shrewsbury in September, 1910, for the inauguration of a national campaign for the eradication of tuberculosis, as a Welsh National Memorial to King EDWARD VII. The charter of incorporation was granted by the King in Council on May 17th, 1912, and it expressly included the border county of Monmouth within the operations of the association. The first report was published just a year ago, giving details of the memorial scheme and of the work accomplished up to that time. In the present report the council of the Memorial Association refers, with natural gratification, to the fact that a national fund of over £200,000 has been raised, and that at the present time means of treatment have been organised so as to be within the reach of every tuberculous patient in the Principality. The country concerned, including Monmouthshire, has been divided into 14 dispensary districts or district sanatorium areas, each in charge of an officer called a tuberculosis physician, assisted by a tuberculosis nurse. In each area there is an institute or headquarters with a series of visiting stations. Local tuberculosis hospitals for cases under observation and for cases unsuitable for sanatorium treatment have also been provided. The association already possesses 87 such hospital beds, and has made arrangements with other authorities for the further 245, but it is proposed to provide institutions with 549 beds in addition to the 87 at present owned by the association, when the arrangements with other authorities may be terminated. Sanatoriums are also provided, and at the present time there are five sanatoriums under the control of the association, with a combined accommodation of 228 beds, while arrangements have been made so that 71 beds are available in other institutions, giving a total of 299 sanatorium beds now at the disposal of the association. Two new sanatoriums, one near Denbigh with 156 beds for adults and at least 30 for children, and one near Talgarth with 254 beds for adults and 50 for children, are in course of erection.

The medical staff of the association at present consists of 28 members—namely, an honorary consulting surgeon, a medical director, 12 tuberculosis physicians, 8 assistant tuberculosis physicians, 2 relief physicians, 1 locum tenens, and 3 medical superintendents of sanatoriums. There is also an education staff concerned with the dissemination of information in regard to the disease. The report of the medical committee of the association upon the year's activities gives a satisfactory record of useful work accomplished. The total number of persons examined by the tuberculosis physicians during the year ending March 31st, 1914, was 8763, of which 3230 were men, 2363 were women, 1612 were girls under 16, and 1558 were boys under the same age. The number of infected persons diagnosed during the year was 5212, or 60 per cent. of the total number seen. During the year 1484 contacts were examined, and of these 360 were diagnosed as being definitely tuberculous, or 24 per cent. of the cases examined. Of the 5212 cases diagnosed as the subjects of tuberculosis 4470 suffered from pulmonary forms of the disease, while 742 presented non-pulmonary localisations of their lesions, being 86 and 14 per cent. respectively. The recommendations made in regard to these cases fall under four heads—viz., domiciliary treatment, treatment at one of the association's institutes, hospital treatment, and sanatorium treatment. Only 11 per cent. of the total number of recommendations made were reference of the patient to a sanatorium, and the pressure of work fell chiefly upon the institutes and the hospitals. The medical committee believe that already they can see an improvement in the type of case coming to them, and they anticipate that an increasing percentage will be found suitable for hospital and sanatorium treatment.

One of the most important features of the campaign undertaken by the association is the organisation of educational agencies for disseminating knowledge in regard to the disease. It is under the control of a superintendent of education and chief medical lecturer, Dr. R. OWEN MORRIS. The educational work is conducted upon four main lines: suitable pamphlets and leaflets are sold and distributed broadcast, a travelling antituberculosis exhibition visits the more populous centres, lectures are given in schools, colleges, and public halls, and conferences of school teachers are held with the sanction of the education authorities. The medical committee in their report rightly lay special stress upon the importance of educating the people against the danger of promiscuous spitting and earnestly invite the county councils and county borough councils to exercise their powers for making and enforcing by-laws dealing with the offence of spitting in public places. Their recommendation is supported by some striking observations made, at the suggestion of the medical director, Dr. MARCUS PATERSON, by Dr. F. C. W. CLIFFORD, the tuberculosis physician for the Swansea district area. He examined the sputum on the Swansea footpaths, and found that of 162 specimens from the streets tubercle bacilli were present in 116, of 144 collected in the Swansea parks they were present in 68, while of 42 specimens examined from the football grounds 20 contained the bacilli. Of a total of 348 specimens examined no less than 204 were found to contain tubercle bacilli. The medical committee of the association are also devoting special attention to the teeth of patients coming under their notice and are endeavouring to combat public ignorance on food values, therapeutic routine, and so on, by the circulation of pamphlet Dr. PATERSON and his collaborators may well b proud of what they have done.

Annotations.

"Ne quid nimis."

THE GERMAN STOMACH.

"German flour, German fruit, and German beer can alone give your body the true German energy." This is one of the dietetic Ten Commandments of Germany, and the precept is necessary, as the Teuton, whether as an invader or a mere holiday tripper, is always pathetically anxious to eat French food and drink French wine. A cuisine more ancient and civilised than his own is strangely attractive to him, just as it was to the hordes that sapped the energies of Rome from the time of Arminius to the fall of the final darkness in the fifth century. From "La Guerre en Alsace," a work of Tacitean brevity and restraint, based on archives and documents, by A. Schnéegans, at one time *député* of the Bas Rhin, we quote the following delicious account of German feasts at the time of the fall of Strasburg on Sept. 27th, 1870: "On 28th September General von Mertens, making his entry into a town that he had burnt and famished, amid a population of which 10,000 individuals had been reduced to the most horrible want, caused to be served to him a dinner of ten covers, at 20 francs a head, during which he and his noble guests drank six bottles of Chambertin, six of Saint Julien, three of Moselle, ten of Roederer's champagne, and three flasks of liqueur." This was a fair beginning, and led to no ill consequences—the wine was probably excellent. On the 29th the General, still in the same hotel, ordered 12 bottles of Riesling, 12 of Saint Julien, six of Roederer, and 12 francs' worth of coffee and liqueurs. Between Sept. 28th and 30th his table expenses, which the city defrayed, amounted to 628 francs. These notes exist in the archives of the city of Strasburg, and passed through the hands of Schnéegans and the Maire, Dr. Küss, who as a medical man must have been edified and interested. Dr. Küss, by-the-by, pulled his city through one of the longest and most horrible bombardments of history, and died in the arms of Schnéegans at the very moment that it was ceded to the German Empire. Schnéegans, who prints for posterity, devotes several pages to an examination of other similar gustatory documents, but though he sets out enormous lists of repasts he omits, alas! to state the number on each occasion of the diners. Count Bismarck-Bohlen, for instance, arrived in Strasburg on Oct. 8th, 1870, and between that date and the 15th the "put-up" of himself and suite cost the municipality 5673 francs. His suite, however, may have been a large one. Von Mertens and his staff spent a similar sum between Sept. 28th and Oct. 17th, but here, again, the staff may have been numerous. Putting the staff in each case at ten persons we get an average per head for one week of about 560 francs, a large sum in view of the fact that the Germans forced tradespeople to accept payments on a peace footing for all eatables and drinkables. The most luxurious put-up at the best continental hotel in those days—the late "sixties"—could not have cost much more than 300 francs per person during one week.

WAS THE NERONIAN BURNING OF ROME A SANITARY MEASURE?

THIS, one of *quaestiones vexatae* of history, has received a definitive answer from Professor Huelsen, who is a most accomplished Roman archæologist. In an elaborate paper contributed to the *Bollettino dell' Associazione Archeologico* he reviews the whole question, beginning with the solution of it attempted by Signor Carlo Pascal, according to whom the "early Christians, obsessed by the wickedness of paganism, set fire, *proprio motu*, to its Imperial seat by way of anticipating the Day of Judgment and the retributive punishment of Hell." This he has no difficulty in disposing of, as inconsistent with well-authenticated facts, and he next examines, with equal thoroughness, the theory of Signor Attilio Profumo, who fills a bulky quarto with attempted proof of the hygienic inspiration of the "incendio"—crediting Nero with "the laudable, if somewhat drastic, design of transforming the lurid old Republican city into a beautiful and healthy capital," and committing the crime of arson accordingly. This, in turn, he shows with equal cogency to be untenable, and finally he deals with the most plausible explanation of all—that of M. Bouché-Leclercq, who in his recent "L'Intolérance Religieuse et la Politique" contends that "while the fire broke out by accident its diffusion was favoured and fed by the Christians, on the one hand, and by the Emperor Nero on the other, contemporaneously, and for special reasons of their own." There is something more than plausibility in this contention, and in his criticism of it Professor Huelsen makes much of the fact, which he deduces from astronomical calculation, that the night of the fire, between July 18th and 19th, 1850 years ago, was one of full moon, when in the clear atmosphere of Italy the lunar radiance renders objects almost as visible as at noontide, and when the Romans of that day (as of this) were accustomed to keep awake and out of doors, enamoured of the freshness, the stillness, and the cool—all of these conditions contra-indicating the operations of the deliberate incendiary. Agreeing with M. Bouché-Leclercq that the fire burst forth by accident, he points out that there were circumstances at the time affecting Nero on the one hand and the Christians on the other which confirm the mythopœic tendency to find in such visitations a personal motive and a personal authorship. The Christians of the first century A.D. were familiar with a series of books, prophetic and apocalyptic, which described in glowing detail the final conflagration (ἐκπύρωσις) of the world, and so quite naturally they saw in the widely diffused flames the retributive vengeance of the Almighty, and piously coöperated with Him in extending it to the heathen shrines and temples they loathed. So much for the Christians. As to Nero, when the fire had run its course he, *more suo*, sought to appease the wrath of the manifestly irate gods by the prescribed sacrificial feasts—ceremonies in which he bore the histrionic part so congenial to him. Hence the legend of his fiddling or performing on the lyre during the conflagration—a legend which the mythopœic tendency aforesaid seeks to strengthen by fixing on the very tower which witnessed his display—a tower which Professor Huelsen has no trouble in showing to be a purely mediæval structure. The abstention of the Christians from the sacrificial feasts in question no doubt confirmed the suspicion or report that theirs was in the first

instance the igniting hand, and hence the popular, if pagan, belief that the fire was all their doing. And so passes to the limbo of exploded fiction one of its most venerable survivals, thanks to the research and to the reasoning of a distinguished member of the Istituto Archeologico of Rome.

VON PIRQUET'S REACTION WITH HUMAN AND WITH BOVINE TUBERCULIN.

Cornelia de Lange has recently[1] reviewed the literature of this subject, and adds her own observations upon it. Like previous writers, she finds that it is impossible, by the use of these two varieties of tuberculin, to tell whether a patient is infected by tubercle bacilli of the human or of the bovine type. This fact may be explained, as Bertarelli suggested, by the assumption that the infection with tubercle bacilli of the bovine type may have been picked up from a human being, and not directly acquired from a bovine source, with the result that the infection is an infection with bacilli of the bovine type that have acquired some of the characteristics of tubercle bacilli of the human type. An alternative explanation is that infection with both varieties of bacilli together has taken place even in those cases in which infection with bacilli of the bovine type is the most probable—that is to say, in infants and children. De Lange has obtained von Pirquet's reaction in 150 patients in the Emma Hospital for Children at Amsterdam; in each case both Koch's old tuberculin and a Perlsucht old tuberculin were employed simultaneously. She classifies her results as follows, dividing up the patients into five groups in accordance with their reactions to these two tuberculins. Group I. contained 15 children who gave a positive reaction to human tuberculin only; three of them had tuberculous peritonitis, it may be noted. Group II. consisted of nine patients reacting to bovine or Perlsucht tuberculin only; two had pulmonary tuberculosis. The 126 children in the remaining three groups reacted to both varieties of tuberculin. Group III. contained 36 cases in which the reactions to the two tuberculins were equal; in Group IV. 42 patients reacted more strongly to human than to bovine tuberculin; and in Group V. were 48 instances in which the reaction to bovine tuberculin was the more intense. Family histories of tuberculosis were obtained in 5 of the cases in the first group, in 5 of the second, in 10 of the third, in 19 of the fourth, and in 18 of the fifth group. In one instance the mother of three children had died from phthisis; two of the children were in Group IV., the third was in Group V., yet presumably all were infected from the same source—namely, the mother. De Lange also quotes examples to show that the same patient may react differently to the two tuberculins at different times. The practical conclusion to which she comes is this: that Perlsucht tuberculin should be used as well as tuberculin derived from bacilli of the human type in testing for von Pirquet's reaction. She also adds a word of warning as to the undue frequency with which pulmonary tuberculosis is diagnosed in children. In Holland, as in other countries, there is a great tendency to label as phthisical all children with any impairment of resonance at the apices of the lungs. De Lange finds that many of these give a negative von Pirquet's reaction, and she believes that what they are suffering from is a chronic pneumococcal and not a tuberculous infection. It is to these non-tuberculous cases that she attributes the high percentage of recoveries or cures reported by open-air schools for the treatment of consumption in children.

[1] Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam, 1914, 438.

ULCERATION OF THE PHARYNX IN TYPHOID FEVER.

IN a certain number of cases of typhoid fever—variously estimated at from 6 to 12 per cent.—one or more small superficial ulcers occur in the pharynx, usually upon the anterior pillars of the fauces. Though they are so characteristic as to have diagnostic value, and have been carefully described by French clinicians for more than half a century, they have not received much attention in English or American text-books, which little more than mention the possibility of pharyngeal ulceration. This was known to the older writers—Louis, Chomel, Murchison, and Jenner—but the characters of the ulcers were first accurately described in 1843 by Nonat, who wrote: "Les ulcérations dont il s'agit affectent ordinairement l'un des piliers du voile du palais; elles sont ovulaires; leur étendue varie; il en est qui ont la grandeur d'une pièce de vingt-cinq centimes; d'autres sont un peu plus petites; leur bords sont taillés à pic; leur fond est grisâtre; la membrane muqueuse qui les entoure est injectée, rouge sur une surface plus ou moins grande." In the *Boston Medical and Surgical Journal* of July 23rd Dr. N. B. Potter, assistant professor of clinical medicine, Columbia University, has reported six cases of the condition and exhaustively reviewed its literature. After Nonat's description he can find no mention of the ulcers until they were again described by another Frenchman, Bouveret. He does not refer to Nonat's communication, and—alas, for fame!—the ulcers have been named after him. In 1883 they were ably portrayed at the Société Médicale des Hôpitaux of Paris by Duguet, after whom they have also been named. A practical aspect of the subject is the fact that the ulcers are liable to be regarded as syphilitic. Dr. Potter fell into this mistake in his first case. The patient was a woman, aged 27 years, who, although still at work, had for some days been suffering from malaise, headache, and sore-throat. There were slight pyrexia, a coated tongue, and a superficial yellowish-grey ulcer of the size of a small bean at the upper third of the left anterior pillar of the fauces. It was surrounded by a narrow zone of reddened mucous membrane, and the lymphatic glands at the angle of the jaw were a little enlarged and tender. A culture upon blood serum showed the staphylococcus aureus. In a few days a palpable spleen, rose spots, and a positive Widal reaction settled the diagnosis. Within ten days from its first observation the ulcer healed without leaving a visible scar. In the second case secondary syphilitic ulceration of the throat was diagnosed by several practitioners before the patient was admitted into hospital. In the third case a tentative diagnosis of diphtheria was made. In the fourth case a man, aged 27 years, was admitted into hospital with a temperature of 103° F., complaining of sore-throat and headache. There was a maculo-papular eruption suggesting secondary syphilis. The tongue was moist and showed a yellowish coating and three ulcers, varying in diameter from 0·5 to 1·5 cm. The smallest was beneath the tip, the

largest on the left side an inch from the tip, opposite a jagged tooth, and the third half way between this and the tip. There were three similar ulcers on the anterior pillars of the fauces. The Widal reaction passed from negative to positive three days before death, which took place a week after admission. In only two out of the six cases were the cervical glands enlarged and tender. As to the pathology of these ulcers, French writers at first claimed that the lymphatic tissue of the pharyngeal ring was involved, but they presented no anatomical evidence, and Landgraf showed that the same type of ulcer occurred where there are no lymphoid follicles (lips and epiglottis). In only a small minority of cases have typhoid bacilli been found in the ulcers, which appear due to a superficial nutritional disturbance produced by dryness of the mouth followed by a staphylococcic or streptococcic infection. The ulcers appear sufficiently early to be of some value in the diagnosis of typhoid fever, although an apparently similar condition has been described in four cases of tuberculosis.

ANAPHYLAXIS AND STATUS LYMPHATICUS.

As a result of observations made on cases of fulminant infection in children, some account of which has already appeared in our columns,[1] Dr. Charles McNeil[2] has been led to formulate some interesting suggestions as to the possible explanation of such occurrences as instances of anaphylaxis. The typical conditions found post mortem in animals dead of anaphylactic shock are vascular congestion, œdema, spasm of some of the non-striated muscles, and destruction of delicate epithelia. In cases of fulminant pneumonia these conditions are well marked, the lungs showing the condition in an extreme form, with intense engorgement of vessels, constriction of the bronchial muscles, inter-alveolar œdema, and destruction of alveolar epithelium. There are also cyanosis of the skin and congestion of the renal vessels. Now these cases of fulminant infection generally exhibit the hyperplasia of the lymphatic system and thymus which characterises the status lymphaticus, the thyroid gland also showing enlargement. Dr. McNeil suggests that this morbid condition is brought about by some chronic intoxication, possibly by some foreign protein, either bacterial or other, circulating in the system, and that this intoxication is responsible for the hypersensibility of the tissues which is revealed in the production of anaphylactic shock as the result of some slight stimulus; in other words, the lymphatic diathesis is a condition of hypersensibility. The sudden death which occurs in these subjects is anaphylactic in origin. It must be admitted that these views are speculative and that the evidence on which they are founded does not amount to proof, but the whole subject of anaphylaxis is comparatively new and is involved in considerable obscurity. In favour of the hypothesis we must recognise that the lymphatic enlargement is very suggestive of a chronic infection or intoxication, while the thyroid gland is said to be enlarged in measles, diphtheria, and other infections of childhood. The hyperplasia of the thymus is not so clearly explicable, as its lymphoid character is not quite certain, although its function as a gland with an internal secretion is equally problematical. A difficulty further seems to exist in the fact that anaphylaxis is to a great extent specific, the same antigen which originally produced hypersensibility being necessary for the subsequent development of anaphylactic shock, so that it would be reasonable to expect that the same organism which causes the pneumonia must have been guilty of the production of the lymphatic diathesis—a mode of causation which is supported by no evidence. Still, we cannot be sure that such specific relationship is indispensable in all instances, and Dr. McNeil's speculations are of considerable interest as suggesting new connexions between the obscure phenomena of anaphylaxis and important clinical conditions of disease.

[1] THE LANCET, March 15th, 1913, p. 770.
[2] Edinburgh Medical Journal, July and August, 1914.

WE regret to learn of the death on Tuesday last, at the Tower House, Cudham, Kent, of Sir Henry Greenway Howse, consulting surgeon to Guy's Hospital, late President of the Royal College of Surgeons of England, in his 73rd year.

OPEN-AIR HOSPITALS IN WAR TIME

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BUILDING committees have been in the past anxious to erect a structure which, as they say, should be worthy of the city in which it is placed, and give those who subscribe to its cost something to look at and be proud of. Such sentiments have to my knowledge greatly influenced the builders of hospitals and have been put forward as the justification for a good deal of not strictly necessary ornament. During the last 20 years we have been learning the lesson slowly, but it is sinking in deeply, and already is thoroughly accepted by the leaders of the profession, both sanitarians and practitioners, that the usefulness of hospitals is almost in inverse proportion to their architectural merits and that our exaggerated notion of "comfort" is inconsistent with healthy surroundings. Draughts of air, low atmospheric temperature, and dampness are not the disease-bearing agencies they were once supposed to be, while bad ventilation and equable warm temperatures are depressing, debilitating, and retard recovery. Even dampness does no harm where there is a good current of air.

Experience in Hospital Ventilation at Birmingham.

With the elaborate artificial system of ventilation introduced into the Birmingham General Hospital it was possible to maintain the wards and corridors at practically the same temperature day and night, and this was fixed at 60° F. as the recognised sick room figure, but it was soon found that its very equability was a disadvantage, that those who had to work in these temperatures felt weakened, and within a few months after the building was opened for use the temperature of the corridors and that of wards at night was reduced to 55°, the former figure of 60° being retained for the wards by day. By degrees complaints were heard not from those who had to work in these temperatures or on their own account, but by and on behalf of the patients, especially the surgical patients, and above all the children: complaints of delayed convalescence, of

debility, and of retarded healing of wounds, results which would have been more seriously felt and less easily borne if it were not the case that the hospital has in the Jaffray Branch a suburban dependency to which stationary cases can be transferred, thus relieving the beds of the parent institution. In spite of these advantages the complaints did not diminish and the need for fresh air was urgently felt. By many members of the staff the elaborate system of ventilation was regarded as worse than a failure, but as it provided the only means of heating the building it was endured and other means of remedying the evil were sought. Fortunately the architects had provided balconies, more for ornament than for utility, at the free ends of the wards, and to these balconies, enlarged in some cases by structural alterations, the patients are removed, being accommodated in long wicker chairs, but even so only a proportion of the patients can benefit by this treatment. A proposal to build large verandahs to each of the wards of the Jaffray Branch, to which access should be given by windows opening down to the ground, was, although supported by the medical staff, rejected by the committee on the grounds of structural difficulties and expense, and this highly desirable alteration still remains to be made.

It was at the Queen's Hospital that the first attempt was made, although only on a small scale, to treat ordinary hospital patients in an open-air ward. The ward is on the roof of the hospital and is about half covered in, but quite open to the south. It certainly did not look "comfortable," and seemed open to the objection of getting all the smoke as well as the rain and snow. After it had been in use for some time I visited it with the late Professor Foxwell, who had suggested its creation, and what surprised me most was that patients and nurses seemed to like it, and my fears that it would be regarded as "uncomfortable" received no kind of encouragement from those to whom I spoke. Moreover, I found that they were not surgical cases only, but in fact were chiefly medical; and in particular I was shown a case of pneumonia which was doing very well. I climbed down from that visit to the roof converted, not to the advantages of open-air treatment only, for of that I had been long convinced, but of the practicability of carrying it out even in the middle of a smoky city like Birmingham.

The Open-air Treatment of Disease.

During the meeting of the British Medical Association in Liverpool in 1911 I had the pleasure of visiting the Country Hospital for Children, where in a large ward quite open to the estuary of the Dee I found something like 150 children of ages from 2 to 10 or thereabouts. Their cots were placed close together and in three rows parallel with the long axis of the ward and to the open side. Here there was no question of floor space or cubic feet of air. They were in the fresh air, exposed to all the sun that shone on that shore and to all the wind and weather that might befall. These children from the slums of Liverpool were suffering from all sorts of diseases, medical and surgical, and were under the care of Dr. Macalister and Mr. Robert Jones. They were presumably ill, but they did not look it. They had rosy cheeks for the most part, and their appearance testified most strikingly to the vivifying effect of open air. They were as unlike the ordinary inmates of a children's hospital ward as it is possible to imagine.

Why have we been so slow to recognise that fresh air is the best tonic, the best antiseptic? It is cheaper, pleasanter, and undoubtedly more efficient than drugs. The successful treatment of tuberculosis in the open air led the way to the wider adoption of this method for other diseases. It was his observation of the results achieved by Dr. Huggard at Davos, whose advocacy of fresh air and courage and success in inducing his patients to discard their prejudices in favour of "warmth and comfort" were so remarkable, that inspired Dr. Foxwell with the wish to give the same plan a trial in the treatment of ordinary diseases at the Queen's Hospital. Yet the open-air treatment of consumption has been carried out for only some 25 years, although its value had been demonstrated by Mr. George Bodington, of Sutton Coldfield, and explained by him in his little book on the Treatment of Pulmonary Consumption, published in 1840. Half a century had to pass away before the plan was revived, and this was not the direct result of Mr. Bodington's teaching, nor, we must regret to feel, was it due to the efforts or clear-sightedness of his own countrymen. The Warwickshire surgeon might know the truth, but his little lamp soon flickered out, and his contribution to the knowledge of his profession was forgotten, although when its value was proved by the work of Walther of Nordrach and others it received the belated honour of being included in the 173rd volume of the New Sydenham Society's reprinted monographs (1901).

The experience of the American Civil War was all in favour of improvised hospitals or tents, but it preceded the enormous advance in surgical treatment due to Listerism, so that surgeons look back on those days with a shudder at results which were so poor even where there was abundance of fresh air and sunlight, owing to the existing ignorance of the causes of wound infection. Yet those who took part in the medical and surgical work of the war had no doubt, and in the report of Surgeon-General Billings in Circular 4 of the Medical and Surgical History of the War he says, speaking of hospital construction, "*The object to be kept in view is to furnish shelter without diminishing that supply of pure air and light which is necessary to health*"; other points, such as locality, exposure, plan of construction, modes of heating and ventilation, are only of importance in so far as they secure that object. Wiser words were never written, but it is doubtful whether their meaning and importance have been fully appreciated or allowed due weight when the question of hospital construction has arisen. We have learnt that life in the open air is not only possible but pleasant, that cold air is a tonic as George Bodington maintained, that warm rooms are debilitating, while a current of air that enters from ventilators or partly opened windows and other narrow openings causes draughts which when they impinge upon the inmates give rise to discomfort and complaint, too often resulting in their being stopped up.

Suggestions as to Hospital Provision.

It is to be hoped that these principles may be borne in mind in the course of the arrangements that are being made, and will have to be made, in the provision for the sick and wounded during the present war. It is quite probable that the accommodation already made will prove insufficient and that large additional space will be needed. In the American civil war and in the Franco-Prussian war the suitability of wooden buildings was abundantly proved, and with our

increased knowledge and confidence in the advantage of simple structures it is to be hoped that no more money will be spent upon structural alterations for hospital use, but that simple erections will be made for which there are many good designs to be seen in the more recently erected sanatoriums for the treatment of consumption, none being better than that recently opened at Little Bromwich outside Birmingham. Even these in many respects may be simplified in accordance with the temporary use to which they will be put.

Open wards dispense with all need for considering methods of heating and ventilation; windows and doors are not required, but it may be desirable in some places to have sliding wooden screens to afford a certain amount of protection in stormy weather. Flooring may be made of asphalt or simply beaten earth, covered with a thick layer of pine sawdust which can be renewed easily with a shovel, and which absorbs all damp to an extraordinary extent. The late Professor George Vivian Poore demonstrated the great value of pine sawdust as an antiseptic absorbent and its special value for taking up and deodorising such liquids as urine. He was asked by the South Western Railway to suggest a simple form of urinal for the use of the men engaged in their works at Basingstoke, and he proposed the provision of a simple trough made by two planks put at an angle, filled with pine sawdust; when he was asked how often the sawdust would have to be renewed he said, "Practically never." He was in the habit of showing his friends a flannel jelly-bag half full of sawdust which he and his assistant had used in his room at University College for six months at the time I saw it as a urinal, the effluent from which in the whole of that time amounted to something less than a pint of a pale fluid which smelt only of turpentine. If these hospitals are put up as is proposed in the grounds attached to buildings, or in unoccupied land in their neighbourhood, there ought to be no difficulty about the disposal of fæces, which should be superficially buried in shallow trenches. Soiled dressings should be burnt, and a proper furnace connected with the sterilising apparatus would be a necessary adjunct to the hospital.

The University buildings at Bournebrook, Birmingham, have been transformed at very considerable expense into a hospital of 600 beds, but it is likely that many more will be needed. There is plenty of room there for the erection of such an annexe as I have in mind, and there would be no difficulty in Birmingham in forming a committee to provide the money and equipment and to superintend the provision of all that is needed for such an extension. It is to be hoped that the medical press will support this plan and exert its influence to prevent the unnecessary expenditure of public funds in the costly transformation of originally unsuitable buildings. The campaign in favour of fresh air and sunlight is also that of efficiency and economy, and where, as has been pointed out by high authority, money may in the end be the decisive factor in this great struggle there can be no justification for wasting it, especially when better results may be obtained by cheaper methods.

CENTENARIANS.—Mrs. Jane Welsford, of Mount Pleasant-road, Newton Abbot, celebrated the 100th anniversary of her birthday on August 21st.—Mrs. Eliza Ann Church, of Sittingbourne, died on Sept. 15th, having passed her hundredth year.

ANNUAL REPORT FOR 1912 OF THE REGISTRAR-GENERAL.

II.[1]

A LARGE share of Dr. T. H. C. Stevenson's contribution to this report has reference to those diseases which as causes of death are especially important to the practical sanitarian. Prominent among these are the common infectious maladies, regarding several of which medical knowledge is steadily being improved under the instrumentality of the Notification Act. Since the year 1910 the Local Government Board has published periodical returns of the cases of infectious disease notified in this country, and in the present report the prevalence as well as the case fatality of these diseases is shown for the urban and rural parts of each administrative area of England and Wales. When a sufficiency of these returns shall have been collated and properly analysed a store of preventive information, far more trustworthy than a study of death-rates alone can supply, will be accessible to our sanitary authorities.

Enteric Fever.

The loss of life in England and Wales from this disease was less in 1912 than in any previous year, the deaths corresponding to a rate of not more than 44 per million living. Up to the year 1904 the annual victims to enteric fever had never been fewer than 100 per million living, from which it will appear how rapid has been the progress towards its extinction that has been effected in the last few years. Although the prevalence of this disease is believed to be largely dependent on urban conditions of life, it is noteworthy that the mortality of the smaller towns is higher than that of the larger, both in the north of England and in Wales, whilst in the south it is higher than in London. The true explanation for this probably lies in the greater sanitary progress achieved in the larger towns. The fact that the incidence of the disease was lighter in the metropolis than in the rural districts indicates how powerfully the ill-effects of population density can be counteracted by sound administration. The increasing degree in which hospital isolation is resorted to in the present day must conduce to the suppression of this disease by limiting the channels of infection. In London 73 per cent. of the enteric fever deaths took place in public institutions, and in the county boroughs 65 per cent. The percentages, however, fell to 46 in the smaller towns and 44 in the rural districts. From the sickness returns now published by the Local Government Board we learn that although the cases notified in 1912 were less numerous than in the previous year, their fatality was higher, having risen from 176 to 194 deaths in each 1000 reported cases.

Scarlet Fever.

The death-toll levied by this disease has been rapidly diminishing in recent times. The mortality in 1912 was at the rate of 54 per million living at all ages and of 166 per million at ages under 15 years, these rates being respectively higher by 2 and 7 per million than had been those of the previous year, which were the lowest on record. Until 1906 the loss of life from scarlet fever had never been less than double that of 1911. Examination of the death-rate alone would encourage the hope that this disease was rapidly tending to disappear; but the notification returns indicate that it is still widely prevalent. The diminished mortality corresponds to an exceptional mildness of type of disease, which contrasts sharply with the experience of a generation or two ago. Taking the term "fatality" as expressing the ratio of deaths to cases occurring, the report shows that in the last two years scarlet fever fatality has averaged from 18 to 19 per 1000. In the absence of corresponding returns comparison cannot be carried back to dates earlier than 1911. But the fact that 94 per cent. of the London deaths occurred in hospitals or nursing homes suggests comparison with the past experience of the fever hospitals of the Metropolitan Asylums Board. In 1912 the fatality among the cases treated in the Board's hospitals was 1·6 per cent., against 1·5 per cent. for London cases as a whole, the difference being probably due to errors in notification. Comparing the recent with

[1] No. I. was published in THE LANCET of Sept. 12th, 1914, p. 707.

the past experience of the Board, it appears that the percentage fatality has gradually fallen from 13·1 in the quinquennium 1876–80 to 2·7 in 1906–10. The type of disease prevalent in London during 1912 was therefore notably milder than the average. Locally the fatality in the last two years has varied considerably, being highest in the large towns and lowest in the rural districts in almost all parts of England. It was also much higher in the north than in the south. In the more recent years the rates varied from 26 per 1000 in the northern county boroughs to 9 per 1000 in the southern rural areas. Whether this excess of urban fatality in the north was exclusively due to greater severity of type can only be determined in the light of future experience. In view of the fact that in each of the last two years not less than 65 per cent. of all the scarlet fever cases reported were removed to hospital, it would appear that in most cases isolation is still being adequately resorted to for the prevention of this disease. In London the proportion of cases isolated amounted to 94 per cent., but it fell in the county boroughs to 78, in the urban districts to 51, and in the rural districts to 40 per cent.

Diphtheria and Croup.

The deaths referred to these causes in the year under notice were in the proportion of 118 per million living at all ages and of 372 per million at ages under 15 years, the latter rate being the standard preferably adopted in the case of diphtheria and scarlet fever, which diseases are exceptionally destructive in the earlier years of life. These mortalities are the lowest recorded since 1855, when diphtheria was first officially distinguished from scarlet fever. For several years following that date the scarlet fever deaths greatly exceeded in number the deaths from diphtheria and croup, whereas in recent years the order has been reversed. The diphtheritic mortality of 1912 did not greatly vary in different parts of the country; it was lowest in the Midlands and highest in the north of England. It was generally higher in the county boroughs than elsewhere, and, except in Wales, higher in the smaller towns than in the rural areas. If the notification returns are trustworthy the disease was least prevalent in the north; nevertheless, its lower apparent prevalence there as compared with the south is more than counterbalanced by a much greater case fatality which caused the higher mortality above indicated. These differences are susceptible of various explanations, some of which are discussed in the text. Diphtheria fatality ranged from 93 per 1000 attacks in the rural districts to 109 per 1000 in the county boroughs; it also ranged from 76 in the south of England to 125 in the north. Compared with the rates prevailing before the introduction (about 1904) of the antitoxin treatment of diphtheria, the fatality of recent years has been remarkably low. During the four years 1890–93 the hospitals of the Metropolitan Asylums Board experienced a fatality of 304 deaths per 1000 admissions, as against 68 only in the year 1912. Danger to life from an attack by diphtheria depends very largely on the age of the patient, for the fatality decreases rapidly with increase of age. The experience of these hospitals shows that the fatality fell from 404 per 1000 admissions at ages under one year to 41 per 1000 at ages 10–15 years. Of the total deaths from this disease in England and Wales, nearly half occurred in hospitals. In London the proportion was as high as 88 per cent. In other parts of England the percentage was much smaller, and did not exceed 27 in the rural districts. It is satisfactory to learn that the indefinite terms "membranous laryngitis" and "croup" are now falling into disuse; only two of the nine deaths from the first-named condition and none of the 40 deaths from the last-named having been returned from public institutions.

Tuberculosis.

Notwithstanding the gratifying reduction which this country has recently experienced in the loss of life from tuberculosis, the fact still remains that at least one-tenth part of the mortality from all causes is due to this disease. In the year under notice the deaths thus registered exceeded 50,000 in number, and were in the proportion of 1366 per million living. This rate is below that of any previous year, whilst as compared with the average in the quinquennium 1906–10 it shows a reduction of 13 per cent. These figures do not indicate any slackening in the fall of tuberculous mortality, which has been maintained for more than a generation. The age and sex incidence of tuberculous mortality are now for the first time tabulated for each of the great groups of administrative areas of England and Wales. Urban conditions of life appear to increase the liability to death by tuberculosis, but to a much greater degree for males than for females. As in former years, tuberculous mortality in 1912 varied with urbanisation from a maximum in London to a minimum in the rural districts. The excess of mortality in London over that in the country was 97 per cent. for males, but only 22 per cent. for females. Mortality in town and country varies similarly according to sex, whether tuberculosis in general or phthisis in particular is considered. It is noteworthy that the female rate was higher in the county boroughs than in London—a circumstance which probably depends on a factitious lowering of the mortality recorded for young women in London, due to deaths in their country homes of workers enumerated in the metropolis and infected there with tubercle.

Pulmonary Tuberculosis.

Tuberculosis of the lung, or phthisis, accounts for 76 per cent. of the total deaths from tuberculosis and for a mortality equal to 1039 per million of the population. Of the deaths thus classified, more than 21,000 were certified as from pulmonary tuberculosis, whilst nearly 13,000 were indefinitely returned as from "phthisis," without mention as to its tuberculous nature. Only 23 deaths were assigned to "consumption," a term which is now seldom employed in medical certification. Not a single death was referred to "decline," another misleading term which at one time was a frequent entry in the registers. Interesting details of the forms of tuberculous disease, as well as of the complications observed, are given in the report. New tables are also added supplying information as to age at death and place of its occurrence. They afford means of comparing medical certification as carried out in public hospitals and in private practice respectively. Thus, among the deaths from chronic phthisis occurring in public institutions the tuberculous nature of the disease was affirmed in almost three-fourths of the fatal cases, whereas the corresponding proportion in private practice was only 58 per cent. The bulk of the institution deaths occurred in Poor-law establishments, where the proportion of cases definitely certified was rather less than in hospitals. It is noteworthy that, except in the case of infants, more deaths are returned from Poor-law than from other institutions. The hospital deaths are those of young persons, the Poor-law deaths those of the elderly. In Poor-law establishments, as age advances, the deaths of males outnumber those of females in steadily increasing proportions, until at ages 55–65 they constitute over four-fifths of the whole. For this Dr. Stevenson suggests as a possible explanation that the crisis involved in a working-class family by disablement of the breadwinner leaves no alternative but the workhouse; whereas if the wife or mother were the patient she could be kept at home. Whatever be the cause of the difference the above information is interesting as indicating the type of patient for whom accommodation in institutions is required.

Syphilis.

For the purposes of the recent Royal Commission on Venereal Diseases a special study of the mortality records of 1911–12 concerning this disease was undertaken by the General Register Office. In his interesting comments on the prevalence of syphilitic diseases in this country Dr. Stevenson remarks that the deaths tabulated from the registers as due to syphilis afford no measure of the mortality properly ascribable thereto. This is inevitable under the present system by which the causes of death are certified, an open certificate being handed to the relatives of the deceased person and being subsequently included in a register open to public inspection on payment of a trifling fee. The practitioner is strongly tempted in many cases to avoid mention in the certificate of the nature of the disease causing death. Considerations of this sort obviously apply far less to public than to private practice. Consequently the proportion of deaths returned as syphilitic from institutions is found to be far higher than that returned by private medical attendants. Dr. Stevenson has devoted to this subject a large portion of his report, showing by elaborate tables the diseases believed to depend on syphilitic infection, and giving the distribution of the disease among the several social classes of the population.

THE WEATHER OF AUGUST.

THE weather of the chief holiday and harvest month was, considered as a whole, very fine. The first week, however, was far from propitious, rain being frequent, sunshine rare, and the temperature some degrees below the normal. The subsequent improvement was general and striking. Bright, sunny days became the rule instead of the exception, and the thermometer, while it refrained from rising to an unduly high level during the day, and generally descended to a refreshing figure at night, recorded a mean warmth between 2° and 4° above the average. Another good feature of the weather was the absence of severe thunderstorms. Isolated storms occurred during the first six days, and a more general outburst on the 14th and again on the 21st, and others were experienced here and there on the 24th, but in very few spots was there any material damage by rain deluges or lightning. A quite exceptional downpour of rain, however, occurred at Guernsey during a thunderstorm on the 14th. The tremendous quantity of 1·5 in. fell in 15 minutes, which is at the extraordinary rate of 12 ft. in 24 hours. The chief wind current during the first week or so was from south and south-west, accounting for the cool, unsettled weather, and winds from a similar point of the compass were prevalent for a time after the 20th, but there were many days with light airs from various quarters. The dry spell which proved so valuable to farmers was unbroken over the greater part of the country from the 9th or 10th until the 20th or later.

The south-eastern corner of England was, as is more often than not the case, the warmest part of the kingdom. At Kew the mean maximum temperature was as high as 73°, nearly 3¼° above the average, and the mean minimum no lower than 57¼°, or 4° above the average. The same mean maximum was recorded at Tunbridge Wells, but there the nights were cooler, the mean minimum temperature being 52½°. At the resorts along the south coast and also at Leamington Spa the mean maximum temperature was about 70°, and the mean minimum, except at Leamington, a trifle higher than at Kew. At the inland Spa the corresponding value was within a small fraction of that at Tunbridge Wells. Harrogate was a little cooler both during the day and night, the mean day maximum being 68° and the mean minimum 51°, while Buxton was cooler still, the corresponding figures being 66° and 50°. The extreme south-west coast of England enjoyed its usual equability. As a rule the mean maximum temperature was 68° or 69° and the mean minimum about 11° lower, while the hottest day of the month, about 74°, was several degrees cooler than London and the south-east of England generally. The warmest weather occurred during the dry spell after the 9th, but the highest temperature of all did not occur in the south-eastern counties. It was registered in North Wales and Anglesey, where the shaded thermometer ascended to 85° or 86°. The number of days with rain varied from 9 or 10 in the south and south-east of England to 13 or 14 in the west and north, but nearly everywhere the total quantity was much less than the normal. The south-eastern counties were the driest, especially Kent and Sussex. At Tunbridge Wells and Eastbourne there was only about 0·8 in., against an average of about 2·3 in., while Brighton and Hastings both had less than an inch. Further north and west the amount was larger. At Kew it was 1·2 in., or 1·1 in. less than the average, at Birmingham 2·1 in., and at Buxton 4·6 in. Tenby was among the most rainy spots in the west, with a total of 4·4 in., but this was an inch less than at Swansea. At Newquay and Torquay, on the other hand, the respective values were only 1·7 in. and 2·4 in., both figures being considerably below the normal. The coast of North Wales and the coast of Lancashire were also dry; at Llandudno the total rainfall was only 1·3 in., against an average of 3·0 in. Owing to the cloudy condition of the first week the aggregate number of hours of sunshine was not very much above the normal over the country generally, and in a few isolated places it only equalled it. The highest figures were recorded along the south coast, but the south-west coast was not far behind. At Eastbourne the number was 253 hours, rather more than 8 hours per day, or nearly 1½ hours in excess of the normal. Wales and the coast of Lancashire, however, were the brightest districts in relation to the average, although the total was not so high. At Tenby, Llandudno, and Blackpool, where the aggregate in round figures was 230 hours, the excess on the average was 2 hours per day. The London area was relatively dull; at Kew the total for the month was only 172 hours, or 16 hours less than the average. The dullest spot was Manchester, with little more than half the aggregate of Eastbourne.

The three summer months, June to August, were everywhere slightly warmer than the average, and except in the south-west of England and the south of Ireland the rainfall was below the normal. There was also more sunshine than usual, except in the south-west of England, the Channel Islands, and the west of Scotland. The brightest districts were the south of England, with a mean of 7·4 hours per day, the Channel Islands with 7 hours per day, and the east of England with 6·8 hours, but Wales and the south-west and north-west of England were only a little less sunny.

ASYLUM REPORTS.

Worcestershire Asylum at Barnsley Hall, Bromsgrove (Annual Report for the Year 1913).—The total number of cases under treatment at this asylum during the year 1913 was 716, the average daily number on the registers being 620. There were admitted 105 cases. Of the direct admissions two-thirds were regarded as incurable when admitted, and 25 per cent. of these were cases of senile dementia. Family histories of insanity were obtained in 34·9 per cent. of the first attack cases, and in addition a history of alcoholism or of neuropathic taint was found in 40 per cent. of the cases. Dr. Percy T. Hughes, the medical superintendent, believes that with increasing knowledge of the causation of mental disease this hereditary taint will not be regarded as of such universal importance. He instances general paralysis of the insane, in which, now that it is definitely known that the disease is caused by the organism of syphilis, it is recognised that hereditary taint is a much less important causal factor than it was formerly considered to be. Similarly, in cases of myxœdema it is recognised that the condition is due to disease of the thyroid gland, and that neuropathic taint has little influence as a causal factor. Dr. Hughes further is of the opinion that when the causes of certain large groups of acute insanities are better known the hereditary factor will occupy a less prominent position than at present. Fifty-three cases were discharged during the year, and of these 17 patients were recovered and 26 were improved, yielding a percentage of 54·4 upon the direct admissions. Forty-two deaths occurred during the year, and in all but six post-mortem examinations were made. The death-rate on the average daily number resident was 6·7. In five cases only was active tuberculosis found, though in another 13 evidence of old tubercle was forthcoming.

Monmouthshire Asylum (Annual Report for the Year ending March 31st, 1914).—The total number of cases under treatment during the year was 1388, the average number resident being 1129. There were 158 direct admissions, of which 55 were suffering from insanity of an incurable type. A history of hereditary predisposition was obtained in 30·3 per cent. of the cases and of alcoholic excess in 15 per cent. Dr. N. R. Phillips, the medical superintendent, is of the opinion that this number would be considerably higher were more reliable histories obtainable. The discharges numbered 161, of which 47 were recovered. There were 98 deaths, the rate on the average daily number being 8·6 per cent., which is below the average. Pulmonary tuberculosis was the cause of death in seven cases.

Certification of Lunatics and the Observation Wards, Glasgow (Annual Report for the Year ending May 15th, 1913).—In this report Mr. John Carswell, certifying physician in lunacy to the Glasgow parish council, states that during the year 1069 cases were intimated to the inspector of poor as being in need of special care on account of mental disorder. Of these, 527 were certified as lunatics, 546 were not so certified, and 43 remained under treatment in the observation wards at the end of the year. Of those certified, 273 were removed direct to the asylums, while 254 were transferred from the observation wards after preliminary observation and treatment. Of the patients not removed to the asylum 486 were treated in the observation wards. The discharges from the observation

wards were 313 recovered, 122 improved, 51 dead, and 254 transferred to the asylums. The figures show the great value to the public of the system established in this parish for the home visitation and examination of every case, and the probationary treatment of patients in the observation wards. The medical aspect of the illness is emphasised, and the result is that patients come to receive treatment in the observation wards as willingly as in a general hospital. Of the 527 certifications, 376 only were certified for the first time, so that the real occurrence of insanity for the year is 64·9 per 100,000 of the population. The number of certifications is 46 less than in 1912 and 67 less than in 1911, and is less than the average for 1901–10. The decrease is more marked among males than females. It is an interesting fact that the total number of first attacks among males during the last three years is less than the total for any three-yearly period during the last 12 years. The highest point was reached during a period of trade depression and the lowest during a period of prosperity. On the other hand, the last three years show a marked increase in insanity among females when compared with the annual averages of 1901–10. Considerations of the age and sex distribution of the population, however, suggest that this is due to an increase in the number of females over the age of 25, at which age they become more liable to insanity. There is also increased tendency to place feeble-minded women under asylum care. Mr. Carswell considers that the figures support his view that insanity is not increasing, and that registered insanity is influenced as regards the fluctuations in its occurrence by causes which are purely economic and administrative. For example, industrial prosperity may enable working people to provide for weak-minded relatives, whereas in times of depression they might be compelled to have recourse to public institutions. With regard to the local incidence of insanity, statistics in Glasgow for the last few years seem to justify the view that there exists a definite relation between the occurrence of insanity and the prevalence of physical disease, and suggest that the problem of the prevention of insanity may prove to be identical with that of the prevention of physical disease. They certainly do not support the view that preventive sanitary measures result in the survival of unfit persons who go to swell the number of the insane and mentally deficient.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

IN accordance with the provisions of Order in Council of April 1st, 1881, Surgeon Gordon Alexander Jackson has been placed on the Retired List (dated Sept. 7th, 1914).

The following appointments have been notified:—Fleet-Surgeons: J. Martin to the *Vivid*, additional, for the *Benbow;* and G. E. Kennedy (retired) to the *Pembroke*, for R.N. Barracks. Staff-Surgeon: J. D. Keir to the *Dolphin*. Acting Surgeon: J. M. Morgan to the *Vivid*, additional, for the *Benbow*. Temporary Surgeons: R. E. Cameron to the *Vivid*, additional, for the *Benbow;* and F. C. Blakeston to the *Vivid*, for R.N. Barracks.

ROYAL NAVAL VOLUNTEER RESERVE.

The undermentioned has been appointed Surgeon:—Ernest Farquhar Murray (dated Sept. 9th, 1914).

TEMPORARY SURGEONS IN THE ROYAL NAVY.

The following is an alphabetical list of the medical officers in the Royal Navy who have been selected for temporary service:—Douglas Knockin Adams, John Wroth Adams, Charles William Archer, Claud Hamilton Blair Avarne, Alaric Ballance, Richard Archibald Barlow, John Rawlings Barrow-Clough, Hugh Wansey Bayly, Thomas Beaton, Bertram James Bewitt, Walter Grimshaw Biggar, Thomas Charles Blackwell, Frederick Cairns Blakeston, John Bostock, Edgar James Boyd, Robert William Brander, Ralph Cay Briscoe, Ralph St. Leger Brockman, David Peebles Brown, Robert Archibald Brown, James Whitson Kemp Bruce, Roger Buddle, Edward Spencer Calthrop, Robert Evan Cameron, Richard Stocker Carey, James Alexander Russell Cargill, Hildred Bertram Carlill, Edgar Carpenter, Geoffry Williams Carte, Clifford Cuthbert Chance, Frederick Ernest Chapman, William Hunter Watson Cheyne, William George Clark, Frederick William Theodore Clemens, Harry Clough, George Cochrane, John Robert Collie, William Pearson Cowper, Thomas McCully Creighton, Thomas Hungerford Cresswell, William Lawrence Cripps, Frederick Hugh Lester Cunningham, Hector Wynne Davies, Howard Vipond Deakin, Edgar Lionel Elliott, Carlton Atkinson Ellis, Frederick Charles Endean, Abel Evans, Arthur Geoffrey Evans, Julian Trevor Eyre Evans, Frederick Bentley Eykyn, Charles James Campbell Faill, Edward Garlick Fisher, Richard Alexander Wilson Ford, Walter Egbert Fox, Humphry Leonard George Foxall, D. French, Henry Ernest King Fretz, Frank Rayshaw Gilhespy, Charles Hart Gimlette, Robert Lionel Glass, Alexander Edward Gow, Arthur Campbell Vaughan Green, Arthur Herbert Harkness, Charles Edward Smith Harris, Arthur Harry Harty, William Hassard, Malcolm Bell Hay, Charles Behmer Heald, Ashley Ernest Herman, Roland Augustus Hobbs, William Henry Stuart Hodge, Gerald Wetherall Caprin Hollest, Frederick James Humphreys, William Ibbotson, William Foulkes Jones, Percival Maurice Keane, Peter Burrows Kelly, Albert Evelyn Fairfax Kynaston, George Eric Warner Lacey, John Lambert, Frederick George Lloyd, Gerald Roche Lynch, Ronald Guy Lyster, William Alexander McKerrow, Arnold McMillan, — Macnairn, Arthur James McNair, John Sides Davies MacCormac, Alexander James MacDiarmid, Alfred Robinson MacMullin, Leopold Mandel, Harold Corry Mann, Charles Ayton Marrett, Gerald Noel Martin, Lionel Arthur Martin, Edwin Maynard, Cyril Frederick Mayne, William Meikle, Robert William Meller, Edward Rowland Alworth Merewether, Reinhard Carl Johannes Meyer, Eric Mackinnon Molesworth, Richard Joseph Monahan, Alan Hilary Moore, Archibald Alexander Morison, Albert Clifford Morson, Donald John Munro, John Henry Newmarch, Frank Nunneley, Charles O'Brien, Gerald Patrick O'Donnell, Robert Sydney Overton, Eric Peace-Gould, Alfred Leslie Pearce-Gould, Hugh Richard Phillips, Durham Dudley Pinnock, Frank Pearce Pocock, William Agard Pocock, Martin Owen Raven, Edward Rayner, Stanley Rivers, Stanley Robertson, William Wilson Rorke, Douglas Ross, James Ewen Robertson Ross, James Ness McBean Ross, Harold Trenchard Rossiter, Archibald Cathcart Roxburgh, Arthur Norman Rushworth, Archibald McKerrow Russell, Alexander Elder Sanderson, Edward Gustave Schlesinger, Charles Frank Schuler, Henry Wakeman Scott, Herbert Edwin Scowcroft, Archibald Campbell Shaw, Reginald Kenworthy Shaw, Charles Woolley Shepherd, Alfred George Simmins, Reginald Eccles Smith, George John Chase Smyth, Gerald Nicholson Stathers, George Frank Stebbing, Thomas Louis Grenet Stewart, Alan Lee Sutcliffe, Charles Lindsay Sutherland, Halliday Gibson Sutherland, Harold Eustace Thom, Edmund Fairfield Thomas, Archibald Todrick, Walter Palmer Vicary, Arthur Viney, Michael Vlasto, Godfrey Alan Walker, John Cuthbertson Walker, John Glen Wardrop, Cuthbert Warner, James Henry Digby Watson, John Nuthall Watson, Walter Geoffrey Watson, James Cairns Watt, Sydney Welham, Hugh Wetherlee, Francis Sylvanus Williams, Frederick Arnold Williamson, Alexander Frederick Richmond Wollaston, and Thomas Wyndham.

ROYAL ARMY MEDICAL CORPS.

Captain John Harold Peck, from the Australian Army Medical Corps, is granted the temporary rank of Captain (dated Sept. 11th, 1914).

The undermentioned are granted the temporary rank of Lieutenant: Gerald Whittington and George Thomas Whyte (dated Sept. 1st, 1914). William Joseph Maloney (dated Sept. 6th, 1914). James Cowie Dick (dated Sept. 7th, 1914). (Dated Sept. 9th, 1914): Nigel Philip Boulton, Evan Hugh Jones, Cyril Douglas Faulkner, Charles Lyon Herklots, Geoffrey Duncan Harding, Douglas Macinnes Hunter, John Marsters Mitchell, John Mowat, John Murray Moyes, Aneurin Evan Roberts, Francis Charles Robbs, and Thomas Holmes Ravenhill. (Dated Sept. 10th, 1914): John Alban Andrews John Stanley Arkle, Hugh John Couchman, Edward Gordon, Bernard George Gutteridge, Frank Wilson Harlow, George Bedingfield Holroyde, Reginald Saint Alban Heathcote, Gavin Dalzell McLean, Donald MacIntyre, Louis Augustus Moran, Samuel Edward McClatchey, Matthew William Baillie Oliver, Henry William Parnis, Gavin Stiell, Richard Henry Stevens, Edward Seelley, Frederick Edward Tillyard, Hill Wilson White, Gerald Douglas Hamilton Wallace, and Robert Ewart Cree. (Dated Sept. 11th, 1914): Reginald George Abrahams, Robert Marshall Allan, Percy Webber Black, Bagot Neptune Blood, James Harding Barry, Alexander Ernest Chisholm, Claud Norman Coad, George Dunluce Eccles, John Morley Glasse, John Henry Graham Hunter, Alexander William Hendry, Richard Arthur Jones, George Harold Lunan, John Richardson Marrack, Benjamin Bell Noble, Thomas Bourne-Price, Robert Edward Roberts, Robert Cecil Robertson, Philip Smith, and Wilfred Archer Sneath. (Dated Sept. 12th, 1914): William Lumley.

TERRITORIAL FORCE.

Royal Army Medical Corps.

1st South-Western Mounted Brigade Field Ambulance: William Cliff Hodges to be Lieutenant (supernumerary) (dated Sept. 16th, 1914).

2nd East Anglian Field Ambulance: Major George Blake

Masson to be Lieutenant-Colonel (dated Sept. 16th, 1914). Captain William J. Caie, from Attached to Units other than Medical Units, to be Captain (dated August 10th, 1914).

3rd East Anglian Field Ambulance: Lieutenant William Reginald Margetts Turtle, from Attached to Units other than Medical Units, to be Lieutenant (dated Sept. 16th, 1914).

2nd Home Counties Field Ambulance: Herbert Stanley Hollis to be Captain (dated Sept. 16th, 1914).

1st North Midland Field Ambulance: Major Edwin A. Wraith to be Lieutenant-Colonel (dated Sept. 16th, 1914).

The undermentioned Captains to be Majors: Thomas Ashley Barron and Frederick Russell Bremner (dated August 1st, 1914).

2nd North Midland Field Ambulance: Joseph Francis Dixon (late Captain 10th New Zealand Rifles (Mounted) to be Captain (dated Sept. 16th, 1914).

2nd South Midland Field Ambulance: The undermentioned Captains to be Majors: William Algernon Louis Holland and John Henry Hobling (dated Sept. 16th, 1914).

2nd West Riding Field Ambulance: Samuel Sowray Greaves to be Lieutenant (dated Sept. 16th, 1914).

1st Wessex Field Ambulance: The undermentioned to be Lieutenants (dated Sept. 16th, 1914): George Downing Perry and Robert Burgess.

3rd London General Hospital: Captain James E. Lane is seconded (dated Sept. 16th, 1914).

3rd Northern General Hospital: Thomas Bernard Mouat to be Captain (dated Sept. 16th, 1914).

5th Northern General Hospital: Officer whose services will be available on mobilisation: Thomas Charles Clare to be Captain (dated August 30th, 1914).

1st East Anglian Field Ambulance: Gilbert Clement Gray to be Lieutenant (dated August 10th, 1914).

2nd Wessex Field Ambulance: Captain Richard P. Ryan, from the list of Officers attached to Units other than Medical Units, to be Captain (dated Sept. 12th, 1914).

5th Southern General Hospital: Captain John T. Leon is seconded (dated Sept. 12th, 1914).

Sanitary Service: Major Robert Burnet to be Lieutenant-Colonel (dated August 10th, 1914).

Attached to Units other than Medical Units.—Arthur Henry Smith (late Captain, 8th (Ardwick) Battalion, the Manchester Regiment) to be Captain (dated Sept. 12th, 1914). Hyman Lightstone to be Lieutenant (dated Sept. 12th, 1914). Lieutenant Joseph M. A. Costello to be Captain (dated August 5th, 1914). Surgeon-Lieutenant Harry G. F. Dawson, from the Welsh Divisional Engineers, to be Captain (dated August 5th, 1914). Lieutenant Vincent Howard to be Captain (dated Sept. 16th, 1914). Lieutenant Arthur C. Bird to be Captain (dated Sept. 16th, 1914). Surgeon-Major Alexander Cosgrave resigns his commission on account of ill-health (dated Sept. 16th, 1914). The transfer to the Territorial Force Reserve of Captain Leonard B. Cane is cancelled. William Albert Robertson to be Lieutenant (dated Sept. 16th, 1914).

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The opening article in the August issue of this journal deals with the Epidemiology of Rheumatic Fever, and is contributed by Lieutenant-Colonel W. S. Harrison. Among his conclusions are the following. The distribution of rheumatic fever throughout the country shows areas of special endemicity in which further investigation would probably prove useful, and there is evidence that it tends to occur in epidemic form, being favoured by drought and high temperatures. He has been unable to find any evidence that cold and wet are important factors in its causation, though they probably help to determine relapses. Finally, he concludes that there is a mass of latent valvular disease in the community which becomes manifest under conditions of exceptional strain, such as that of war. Most of the other articles are of particular interest at the present moment. Captain F. Gracie discusses an Efficient Method of Determining by Charts the Classification of Wounded and the Material and Time Required for their Transport, Captain C. R. Sylvester Bradley contributes some Reflections on the Army Medical Service in Campaign, and Captain H. H. A. Emerson deals with the Collection and Evacuation of Sick and Wounded in the Territorial Force. Captain R. H. L. Cordner makes some interesting observations on the Medical Examination of a Unit on Mobilisation, and in Leaves from a Notebook Colonel R. H. Firth explains in as simple a form as possible "the fundamental physical facts and conceptions underlying ionic medication, the interaction of toxin and antitoxin, agglutination, and catalysis or enzyme action."

DYSENTERY ON THE BATTLEFIELD.

Mr. A. G. Hales, writing as special war correspondent to the *Evening News* from the battlefield on Sept. 14th, reports that German prisoners are stating that dysentery is beginning to make itself felt in their ranks. In the first of Dr. F. M. Sandwith's Lettsomian Lectures, which are now being published in THE LANCET, an extremely timely description of the association of dysentery with war will be found. If the report by Mr. Hales be true the German army may be faced with a most serious situation, and one which the occurrence of wet weather may aggravate. In the Franco-German war of 1870–71 there were nearly 40,000 admissions and over 2000 deaths from dysentery in the German army, and the German troops on their return home spread infection in many districts, where, in Dr. Sandwith's opinion, the populations have even yet not quite freed themselves from the contagion. In the South African war almost exactly the same number of cases of dysentery were reported, although the death-rate was little more than half, and here, again, Dr. Sandwith warns us that an outbreak of dysentery at Aldershot in 1901, with 170 cases and 38 deaths, was apparently due to the importation of the disease by returning troops. It is laid down by Dr. Sandwith that dysentery is a water-borne disease, and this being so we are bound to remember that if either army is attacked the condition may spread to the other, inasmuch as every advancing force must often occupy the position previously held by the retiring enemy, who may already have seriously fouled the site.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 97 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 8597 births and 5291 deaths were registered during the week ended Saturday, Sept. 12th. The annual rate of mortality in these towns, which had been 12·3, 13·6, and 14·4 per 1000 in the three preceding weeks, further rose to 15·2 per 1000 in the week under notice. During the first ten weeks of the current quarter the mean annual death-rate in these towns averaged 12·7 per 1000, and equalled the rate in London during the same period. Among the several towns the death-rate last week ranged from 3·7 in Bournemouth, 4·0 in Barrow-in-Furness, 4·4 in Ealing, 4·9 in Swindon, 5·1 in Exeter, and 6·2 in Gloucester, to 23·4 in Wigan, 23·5 in Stoke-on-Trent and in Middlesbrough, 23·7 in Carlisle, 24·5 in Gateshead, and 25·5 in Stockton-on-Tees.

The 5291 deaths from all causes were 275 in excess of the number in the previous week, and included 1398 which were referred to the principal epidemic diseases, against numbers steadily increasing from 394 to 1189 in the nine preceding weeks. Of these 1398 deaths, 1172 resulted from infantile diarrhœal diseases, 71 from measles, 51 from whooping-cough, 49 from diphtheria, 39 from scarlet fever, and 16 from enteric fever, but not one from small-pox. The mean annual death-rate from these diseases was equal to 4·0, or 0·6 per 1000 above the rate in the previous weeks. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had steadily increased from 112 to 947 in the nine preceding weeks, further rose to 1172, of which 321 were registered in London, 93 in Liverpool, 62 in Birmingham, 38 in Stoke-on-Trent, 35 in Sheffield, 33 in Leeds, 32 in Manchester and in Hull, 28 in Sunderland, and 26 in Nottingham. The deaths referred to measles, which had declined from 111 to 82 in the four preceding weeks, further fell to 71 last week, and included 28 in London, 12 in Oldham, and 4 each in West Ham, Liverpool, and Manchester. The fatal cases of whooping-cough, which had been 51, 52, and 69 in the three preceding weeks, fell to 51 last week, and included 17 in London and 6 in Liverpool. The deaths attributed to diphtheria, which had increased from 31 to 49 in the four preceding weeks, were again 49 last week, of which 16 were recorded in London, 6 in Birmingham, 5 in Stoke-on-Trent, 3 in Sheffield, and 2 each in Portsmouth, Manchester, and Middlesbrough. The deaths referred to scarlet fever, which had been 23, 20, and 25 in the three preceding weeks, further rose to 39 last week, and included 12 in London, 5 in Manchester, 3 in Sheffield, and 2 each in Salford, Newcastle-on-Tyne, and Cardiff. The fatal cases of enteric fever, which had been 9, 14, and 17 in the three preceding weeks, were 16 last week, of which 3 occurred in London and 2 each in Portsmouth, Wigan, and Hull.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had been 3071, 3216, and 3318 at the end of the three preceding weeks, had further increased to 3500 on Saturday last; 619 new cases were admitted during the week, against 414, 536, and 548 in the three preceding weeks. These hospitals also contained on Saturday last 1134 cases of diphtheria, 50 of enteric fever, 41 of whooping-cough, and 13 of measles, but not one of small-pox. The 1394 deaths from all causes in London were 62 in excess of the number in the previous week, and were equal to an annual death-rate of 16·1 per 1000. The deaths referred to diseases of the respiratory system, which had been 143, 132, and 128 in the three preceding weeks, rose to 132 in the week under notice, and were equal to the number in the corresponding week of last year.

Of the 5291 deaths from all causes in the 97 towns, 181 resulted from various forms of violence, and 361 were the subject of coroners' inquests, while 1453 occurred in public institutions. The causes of 45, or 0·9 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Manchester, Leeds, Bristol, West Ham, Hull, Newcastle-on-Tyne, and in 67 other smaller towns. Of the 45 uncertified causes of death, 10 were registered in Liverpool, 6 in Birmingham, and 2 each in London, Southend-on-Sea, Bootle, Blackpool, Sheffield, Sunderland, and Gateshead.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,293,200 persons at the middle of this year, 1043 births and 727 deaths were registered during the week ended Saturday, Sept. 12th. The annual rate of mortality in these towns, which had increased from 13·8 to 16·0 per 1000 in the four preceding weeks, further rose to 16·5 per 1000 in the week under notice. During the first ten weeks of the current quarter the mean annual death-rate in these towns averaged 14·0, against 12·7 per 1000 in the 97 large English towns. Among the several towns the death-rate last week ranged from 9·4 in Falkirk, 11·0 in Ayr, and 12·3 in Perth to 19·9 in Edinburgh, 21·4 in Greenock, and 22·5 in Dundee.

The 727 deaths from all causes were 24 in excess of the number in the previous week, and included 137 which were referred to the principal epidemic diseases, against numbers steadily increasing from 49 to 121 in the six preceding weeks. Of these 137 deaths, 101 resulted from infantile diarrhœal diseases, 16 from whooping-cough, 12 from scarlet fever, 6 from diphtheria, and 2 from enteric fever, but not one from measles or from small-pox. The mean annual death-rate from these diseases was equal to 3·1, against 4·0 per 1000 in the 97 large English towns. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had steadily increased from 29 to 89 in the five preceding weeks, further rose to 101 last week, and included 67 in Glasgow, 7 each in Dundee and Paisley, 6 in Edinburgh, and 4 in Greenock. The deaths referred to whooping-cough, which had been 13, 15, and 16 in the three preceding weeks, were again 16 last week, of which 13 were registered in Glasgow. The fatal cases of scarlet fever, which had been 6, 8, and 4 in the three preceding weeks, rose to 12, and included 7 in Glasgow and 2 in Leith. The deaths attributed to diphtheria, which had been 11, 6, and 8 in the three preceding weeks, fell to 6, of which 3 were recorded in Glasgow The 2 fatal cases of enteric fever occurred in Glasgow,

The deaths referred to diseases of the respiratory system, which had been 69, 70, and 65 in the three preceding weeks, rose to 73 in the week under notice, and 23 deaths were attributed to different forms of violence, against 25 and 30 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the 27 town districts of Ireland with an aggregate population estimated at 1,205,280 persons at the middle of this year, 599 births and 394 deaths were registered during the week ended Saturday, Sept. 12th. The annual rate of mortality in these towns, which had increased from 15·3 to 18·1 per 1000 in the four preceding weeks, declined to 17·0 per 1000 in the week under notice. During the first ten weeks of the current quarter the mean annual death-rate in these towns averaged 16·3 per 1000, against corresponding rates of 12·7 and 14·0 per 1000 in the English and Scotch towns respectively. The annual death-rate last week was equal to 17·1 in Dublin (against 16·1 in London and 17·6 in Glasgow), 18·0 in Belfast, 17·7 in Cork, 12·7 in Londonderry, 24·4 in Limerick, and 22·8 in Waterford, while in the 21 smaller towns the mean death-rate did not exceed 13·7 per 1000.

The 394 deaths from all causes were 25 fewer than the number in the previous week, and included 89 which were referred to the principal epidemic diseases, against 91 and 84 in the two preceding weeks. Of these 89 deaths, 71 resulted from infantile diarrhœal diseases, 7 each from whooping-cough and enteric fever, 2 from scarlet fever, and 1 each from measles and diphtheria, but not one from small-pox. The mean annual death-rate from these diseases was equal to 3·8, against corresponding rates of 4·0 and 3·1 per 1000 in the English and Scotch towns respectively. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had steadily increased from 18 to 74 in the five preceding weeks, fell to 71 last week, and included 39 in Belfast, 17 in Dublin, and 3 each in Waterford and Lisburn. The deaths referred to whooping-cough, which had been 7, 7, and 3 in the three preceding weeks, rose to 7 last week, of which 5 were registered in Belfast. The 7 fatal cases of enteric fever were 5 in excess of the average in the earlier weeks of the quarter, and comprised 3 in Dublin, and 2 each in Belfast and Ballymena. The deaths from scarlet fever were recorded in Dublin and Belfast, that from measles in Belfast, and the fatal case of diphtheria in Drogheda.

The deaths referred to diseases of the respiratory system, which had been 47, 43, and 49 in the three preceding weeks, declined to 35 in the week under notice. Of the 394 deaths from all causes, 129, or 33 per cent., occurred in public institutions, and 7 resulted from different forms of violence. The causes of 8, or 2·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest; in the 97 English towns the proportion of uncertified causes of death last week did not exceed 0·9 per cent.

Correspondence.

"Audi alteram partem."

THE GENERAL MEDICAL COUNCIL AND UNREGISTERED DEPUTIES.

To the Editor of THE LANCET.

SIR,—At a meeting of the Executive Committee of the General Medical Council held to-day the President made a statement in regard to certain correspondence received by the Registrar respecting unqualified locum tenents and kindred matters, and the steps that had been taken in regard thereto.

He read the following letter, which had been sent by the Registrar to the practitioners concerned, which the committee approved and directed to be entered in the minutes:—

With reference to your letter of ....., I am directed by the President of the General Medical Council to inform you that, in terms of the enclosed Warning Notice, any registered practitioner who entrusts his professional practice to an unqualified person or who signs medical certificates on such person's behalf, renders himself liable to be summoned before the Council, and after due inquiry to be adjudged guilty of grave professional misconduct.

The circumstances of the present situation do not, in the President's opinion, afford any excuse for action which the Council has described as "fraudulent and dangerous to the public health."

Means are available whereby the services of registered practitioners can be obtained in substitution of those of practitioners who may be called away from civil practice on military service, and it is the plain duty of the latter to make arrangements for the proper professional treatment of their ordinary patients during their absence.

I am to add that copies of your letter, and of this reply, will be laid before the Council should occasion arise for a judicial inquiry into the matter.

I am, Sir, yours faithfully,

A. J. COCKINGTON,
Acting Registrar.

Oxford-street, London, W., Sept. 15th, 1914.

*** We have referred to this subject in our general notes dealing with new conditions arising out of the war.—ED. L.

THE TECHNIQUE OF ARTIFICIAL PNEUMOTHORAX.

To the Editor of THE LANCET.

SIR,—May I venture to point out more fully the fallacy in Dr. Parry Morgan's reasoned condemnation of the one manometer or direct method. Shortly stated, his thesis is: "The manometer cannot furnish records nor show respiratory movements unless the lung is punctured because (1) the volume of gas involved is small, (2) the gas will move away from the needle point, and (3) the visceral pleura will consequently block the needle."

As regards dictum (1): All that need be said is that whatever the volume may be its behaviour will

be in accordance with the laws of physics. As regards dictum (2): If a small volume of gas be introduced into the pleural cavity and the needle be immediately withdrawn, the gas will be subject to the following forces, (*a*) capillary attraction between the layers of the pleura, tending to keep it in position, and (*b*) during respiration to alternate increase and diminution of pressure. It is a justifiable assumption that the increase of pressure during expiration is greater than the pleural capillarity, consequently the gas will be driven to any part of the pleural cavity, where it will be least subject to compression, and, as Dr. Parry Morgan has shown, will take up a position opposite any consolidated portion of lung. But if the needle connected with the manometer has not been withdrawn the conditions are altered. Capillary attraction still exerts its limiting action, but alterations in pressure are met by the movement of a corresponding portion of gas to or from the manometer. Therefore, the gas does not move away from the needle, as its position is already one in which increase in pressure cannot affect it. It will be accommodated by a conical delling of the lung, the base of the cone being roughly circular with its centre at the point of the needle (a mathematical person might calculate the area of this circle for any volume of gas), and this, provided the needle has not been pushed in to an unjustifiable extent, disposes of dictum number (3). Therefore, provided the lung has *not* been punctured, the manometer will accurately register intrapleural pressures, and respiration will be accompanied by corresponding free oscillations.

I am, Sir, yours faithfully,

Rayleigh, August 23rd, 1914. W. MILLER.

ANTITYPHOID INOCULATION IN WAR TIME.

To the Editor of THE LANCET.

SIR,—On behalf of the Research Defence Society, which represents the general opinion of all who have studied the facts of antityphoid inoculation, we desire to say that the society very strongly approves of this treatment for all men and women who are likely in the near future to come in contact with typhoid fever. We have accordingly offered the services of this society to the Royal Army Medical Corps.

We are, Sir, yours faithfully,

LAMINGTON.
President.

F. M. SANDWITH, M.D.Durh., F.R.C.P.Lond.,
Honorary Treasurer.

STEPHEN PAGET, F.R.C.S.Eng.,
Honorary Secretary.

21, Ladbroke-square, W., Sept. 11th, 1914.

EMETINE IN THE TREATMENT OF CHOLERA.

To the Editor of THE LANCET.

SIR,—I have just read in your issue of Sept. 12th an annotation dealing with the successful treatment of Asiatic cholera by emetine. This reminds me of an experience of my own during the epidemic in the island of Ischia, near Naples, when I was resident physician to the late Lord Holland.

Cholera was decimating the population of the island when we arrived there in June, 1854. Having had a three months' apprenticeship while discharging the duties of house physician at King's College Hospital in the autumn of 1849 I was able to test and to appreciate the value of emetics administered in the earlier stages of the disease. Not having many drugs at hand in the island I fell back upon hot salt and water, and found that if by half-pint doses of this mixture I could ensure copious vomiting for three or four hours the malady might be checked and life preserved.

Reference to your journal during the autumn of 1849 would, I believe, show that this treatment was originally suggested by Dr. Beaman, a general practitioner then living, I think, not far from Covent Garden. I am, Sir, yours faithfully,

Worthing, Sept. 14th, 1914. I. D. CHEPMELL.

*** Mr. George Beaman, of King-street, Covent Garden, W.C., described in THE LANCET of August 23rd, 1834, the successful treatment of 11 successive cases of cholera by saline emetics, disclaiming "merit for originality of system." In THE LANCET of August 11th, 1849, there will be found a synopsis of the treatment adopted by ten of the metropolitan general hospitals during an epidemic of cholera. "Mr. Beaman's treatment" is referred to as being employed at King's College Hospital. We thank our old Paris Correspondent for his interesting note.—ED. L.

CALCIUM CONTENT OF BLOOD IN SYPHILIS.

To the Editor of THE LANCET.

SIR,—Professor F. W. Andrewes recently suggested to me that it would be useful to estimate the calcium content of the blood in patients suffering from primary, secondary, and tertiary syphilis. The following results show fairly well certain apparent differences between the normal individual and the syphilitics. My reason for publishing them is to learn if others who may have done similar work have had like results. Wright's method with throttled glass tube and a solution of ammonium oxalate of known strength was used; all dilutions were made with normal saline solution. The determining factor was the strongest solution of ammonium oxalate in which a clot appeared.

Normal man ...	...	with	1	in	1400	sol.	=	clot.
,, woman ...		,,	1	,,	1400	,,	=	,,
Primary syphilitic		,,	1	,,	1400	,,	=	,,
,,	,,	,,	1	,,	1400	,,	=	,, (Untreated).
,,	,,	,,	1	,,	1200	,,	=	,, (Some treatment).
,,	,,	,,	1	,,	1200	,,	=	,, (Untreated).
,,	,,	,,	1	,,	1200	,,	=	,, (Some treatment).
,,	,,	,,	1	,,	1200	,,	=	,, (606).
,,	,,	,,	1	,,	1200	,,	=	,, (Untreated).
Secondary	,,	,,	1	,,	800	,,	=	,, (Untreated).
,,	,,	,,	1	,,	1000	,,	=	,, (606 and injection).
,,	,,	,,	1	,,	1200	,,	=	,, (Some treatment).
,,	,,	,,	1	,,	1000	,,	=	,, (606 and injection).
,,	,,	,,	1	,,	1200	,,	=	,, (606 and injection).
,,	,,	,,	1	,,	1000	,,	=	,, (606).
,,	,,	,,	1	,,	1200	,,	=	,,
,,	,,	,,	1	,,	1000	,,	=	,, (Untreated).
,,	,,	,,	1	,,	1000	,,	=	,,
,,	,,	,,	1	,,	1000	,,	=	,, (Untreated).
,,	,,	,,	1	,,	1000	,,	=	,, (606 and injection)
,,	,,	,,	1	,,	800	,,	=	,,
,,	,,	,,	1	,,	1000	,,	=	,,
,,	,,	,,	1	,,	1000	,,	=	,, (606).
,,	,,	,,	1	,,	1000	,,	=	,, (Untreated).
Tertiary	,,	,,	1	,,	1200	,,	=	,, (606 and injection).
,,	,,	,,	1	,,	1200	,,	=	,, (606 and injection).
,,	,,	,,	1	,,	1200	,,	=	,,
,,	,,	,,	1	,,	1200	,,	=	,,

In a series of investigations with healthy and non-syphilitic persons I found the calcium content by Wright's method to be equivalent to a 1 in 1300 solution of ammonium oxalate. With the present

series it was convenient to use solutions of 1 in 600, 1 in 800, 1 in 1000, 1 in 1200, 1 in 1400, and 1 in 1600. The method shows the amount of ionic calcium salt which can be neutralised by the oxalate solution in order to prevent coagulation.

The above results demonstrate the fact that whereas the non-syphilitic individual showed a clot with a 1 in 1400 solution the primary syphilitics suggested a tendency to clot with stronger solutions, and therefore pointing to a slight increase of the calcium content of their blood. During the secondary stage the tendency to clot in still stronger solutions is noticed. The average here was a clot with a 1 in 1000 solution, but in two instances clotting was obtained with a strength of 1 in 800. With the tertiary syphilitics some clotting was obtained with a 1 in 1200 solution, but the number of cases investigated was insufficient to draw deductions from. Briefly, these experiments suggest that there is a tendency for slight increase of the calcium content with the primaries, a greater increase with the secondaries, and a decrease again with the tertiaries, so that their bloods contain only slightly more calcium than the non-syphilitic and healthy. If these facts should turn out, after further investigation, to be the truth, how can we interpret them? Possibly the increase of calcium may act as a protective power in that the blood clotting more easily might allow less of the syphilitic toxins to pass out from the capillaries into the lymph which bathes the cells in the various tissues of the body. This is merely speculative argument and may or may not be true. I might mention that in obtaining the few drops of blood from the thumb necessary for the experiment one had to be very quick in most of the secondaries lest the blood clotted on the thumb itself. In some this was not seen, and perhaps previous treatment by "606" may make a difference.

These experiments were performed at the Male Lock Hospital, Dean-street, London, W., by kind permission of Mr. J. Ernest Lane and Mr. J. E. R. McDonagh.—I am, Sir, yours faithfully,

BERNARD MYERS, M.D. Edin.,
Physician to Out-patients at the Royal Waterloo Hospital, S.E.
Wimpole-street, W., Sept. 14th, 1914.

ORAL SEPSIS AND THE EXTRACTION OF TEETH.

To the Editor of THE LANCET.

SIR,—In any given case "wholesale" extraction may or may not be the best treatment, but the man who advises should have a thorough understanding of dental sepsis. Sir James F. Goodhart, on his own showing, does not possess such an understanding. I exposed the weakness of his first letter; may I answer that of August 22nd? In his "poor non-expert way" Sir James Goodhart examines for pockets by finger pressure. If he expresses visible pus there is "pyorrhœa alveolaris"; if not, all is well. This is indeed a "poor non-expert" criterion. It can be applied only to the front surfaces of the more anterior teeth, leaving their interstitial and lingual surfaces and all the back teeth unexamined. Moreover, it is not trustworthy for what it does reach; the pockets may have been but recently evacuated and their bases may be formed by a gutter of unyielding bone from which no finger pressure can express the contents. Unless the examiner uses both a fine probe and cotton-wool wisps and explores carefully the whole circumference of every tooth he can form no judgment of the absence either of pockets or visible pus.

Next I may ask why putrid decomposition is so summarily dismissed. It is, indeed, not pleasant to have to use the sense of smell for its detection, but this will not diminish its danger, and I can offer no more delicate way of detecting it. Why is a stinking cowyard or drain or putrid meat condemned? I can see no less danger in swallowing putridity from between your teeth than from off your plate, and if a thorough examination be made of every mouth the amount of putrid stagnation that is to be found among the teeth will astonish the non-expert.

We are asked, "have the changes said to occur in the bone in these cases [I presume of "pyorrhœa"] been clearly distinguished from those which must exist in company with retrocession of the gum?" Why should we distinguish? In some cases of slow "pyorrhœa" the recession of the gum progresses at an equal rate with the destruction of bone, and the disease is so much the less dangerous, but the carious process is fundamentally the same. Can Sir James Goodhart give us a reason for separating recession of gums from "pyorrhœa alveolaris?"

We are asked for proof that dental (or oral) sepsis is a dangerous condition. Proof is found both in the results of treatment—often by "wholesale" extraction—and in the condition of the local tissues. Has Sir James Goodhart never effected a cure of some one of the manifold diseases of the human body by total extraction of teeth? at least others have, and in no small numbers. This, I take it, is proof of the danger, though not of how much or how little dental sepsis is a danger. This is measured by the patient's resistance—an unknown quantity till tried.

Looking at the mouth we find the tissues in varying states of persistent inflammation and ulceration, while the teeth themselves are being absorbed and extruded, treated as dangerous foreign bodies. The fact of inflammation shows that the local tissues resent the presence of dental sepsis, while every inflamed focus, and more so every ulcer, is a centre for absorption of toxins and germs. This is fundamental pathology. Sir James Goodhart, I presume, does not doubt the ulceration of the toothward surface of the gum-flaps forming the pockets, but there are other areas of ulceration. Wherever the gum is in contact with tartar it is in a state of chronic catarrh or actual ulceration. These two sources of ulceration yield a superficial area of no small extent draining into the mouth or causing absorption into the general system. Is there any doubt of danger? Sir James Goodhart's criterion of danger is pockets and pus. Why is not persistent gingivitis a sign of danger? It indicates dental sepsis, absorption of germs and toxins, and swallowing of putrid débris. As another not negligible danger I may point to the possibility that a septic mouth is a carrier to the detriment of the community.

Sir James Goodhart makes his "position clear" by saying I (the writer) "seem to hold that pyorrhœa is a common disease, an insidious one, easily overlooked, yet associated with definite changes in the bones, and that it leads to septic intoxication. If what I (Sir J. Goodhart) in my ignorance call gingivitis he calls pyorrhœa alveolaris, so be it. My essential point is, however, is it the cause of septic absorption, and is it worthy of the extraction of the teeth in bulk?" Yes, "pyorrhœa

is both common and insidious, and if not easily, at all events frequently overlooked. What Sir James Goodhart calls gingivitis probably is pyorrhœa and associated with bone disease and septic absorption. (The term gingivitis as denoting a separate entity is best used when qualified by the word "marginal," and marginal gingivitis is the first stage in the onset of pyorrhœa.) Gingivitis, even if only marginal, is accompanied by septic absorption, and can only be cured by thorough daily cleaning of the teeth. I submit that where there is systemic infection every tooth that cannot be kept aseptic (and free from smell) should be extracted.

In support of his sceptical position Sir James Goodhart quotes "the usual hue and cry which took place when first the oral sepsis explanation of pernicious anæmia was announced." This seems to be unfortunate, since Hunter's position was that though oral sepsis was an important factor the *causa causans* remained to be elucidated.

Sir James Goodhart protests against "wholesale" extraction. For my part I feel that the protest lies the other way—against those who practise any branch of the art of medicine without a thorough knowledge of the details of dental sepsis.

I am, Sir, yours faithfully,

Wimpole-street, W. J. G. TURNER.

INSURANCE POLICIES AND THE WAR.

To the Editor of THE LANCET.

SIR,—As a matter of importance to many of your readers may I ask you to, if possible, kindly publish this letter and so make known the resolution passed at a special meeting of the committee of the Medical Sickness, Annuity, and Life Assurance F. Society, held on August 21st, a copy of which is appended.

I am, Sir, yours faithfully,

BERTRAM SUTTON, Secretary.

33, Chancery-lane, London, W.C., August 24th, 1914.

[RESOLUTION.]

Any member serving with His Majesty's Forces on active service abroad shall be allowed to retain his membership without extra premium, and shall, on return to the United Kingdom, come into sickness and accident benefit.

Any member serving with His Majesty's Forces while in the United Kingdom shall be held fully covered for sickness and accidents without extra premium.

Any member insured for life assurance serving with His Majesty's Forces either abroad or in the United Kingdom shall not be charged any extra premium and shall be held fully covered.

HELMINTHEMESIS.

To the Editor of THE LANCET.

SIR,—Dr. A. R. Neligan's letter under the above heading in THE LANCET of June 6th, 1914, p. 1649, reminds me that during some years' practice in Assam I noticed the vomiting of round worms to be a very common occurrence. I particularly remember the case of a young child who was very pale and emaciated. On examining the very distended abdomen large masses of worms could be most easily felt. A mixture of eucalyptus, chloroform, and castor oil was given, and the babu was instructed to count the worms expelled. I saw large quantities of them the next day, and I was informed that up to 1000 had been counted and that then the babu had become tired of his job. I am, Sir, yours faithfully,

Suva, Fiji, July 22nd, 1914. D. J. DRAKE.

EMPHYSEMA COMPLICATING LABOUR.

To the Editor of THE LANCET.

SIR,—Some ten years ago I formed a theory as to the pathology of surgical emphysema complicating labour, and I think Mr. Edward Smeed, whose paper appeared in THE LANCET of August 15th, p. 445, may be able to adduce evidence either in favour of or against it.

There are it seems to me strong reasons against the theory that the emphysema is due to either a rupture of pulmonary vesicles or of "the larger air tubes" (Blundell, Obstetrics, 1830). In all the cases I have seen recorded the face is involved—often chiefly involved. In pneumothorax there is never surgical emphysema of the face and neck. In all the cases of emphysema complicating labour (as in Mr. Smeed's) the most careful examination has failed to discover signs or symptoms of pulmonary disease either before or after the occurrence of the emphysema.

A case recorded by Dr. Wm. Smith[1] suggested to me what seems to be a much more plausible pathology. A little while before reading his case I had come across three cases of fracture of the lacrymal bone associated with—indeed, diagnosed from—surgical emphysema of the face. These were all due to comparatively trivial injuries. In the third case the patient had fallen and struck her nose, but not sufficiently to produce an ordinary black eye. In this case I got the patient to blow the nose a number of times, and with each attempt the surgical emphysema spread, first filling out the eyelids and then spreading over the malar region and the cheek.

Now Dr. Smith's account is as follows: "..... [when the head reached the perineum] the pains became strong and lasted much longer. At this stage the patient's eyelids suddenly became swollen, and she complained that she could not see out of her left eye. The swelling rapidly spread over the face. ..... The subcutaneous swelling was found to extend over the whole face, the front and sides of the neck, and over the front of the chest as low as the third rib. ..... The emphysema by the fourth day had completely disappeared."

My suggestion is that—remembering how exceedingly thin the lacrymal bone may be—the straining during labour caused a slight laceration of the bone and its mucous covering, and continued efforts forced air first into the eyelids and then over the face and neck. It would be interesting to know whether Mr. Smeed or anyone else who was with his patient noticed where the emphysematous swelling first appeared and in what direction it spread. I am, Sir, yours faithfully,

Bradford, Sept. 12th, 1914. JAMES PHILLIPS.

A FORM OF MASTODYNIA.

To the Editor of THE LANCET.

SIR,—Can I be referred by any of your correspondents to a clear account of cases such as that described below? They appear in my experience to be common, but no observer seems to have thought it worth while to mention them in any of the usual manuals. According to my fancy they might be named mastodynia, neuralgia of the mamma, or a form of chronic mastitis. What I wish to ascertain if possible is the anatomico-pathological condition present.

[1] The Stethoscope, November, 1904.

The kind of case I allude to is that of a young woman whose complaint is that of pain in the breast, and on examination a small flabby breast is seen. I have never found the trouble in those women who possess firm mammæ. Examined with the flattened hand the breast may not show any thickened lobuli, but on careful palpation tender areas along the ribs underneath the upper quadrants will be revealed, and usually in the position of the cartilages slight thickening is apparently present. Some of the cases complain of pain in the mid-axillary line and not over the mamma, and the symptoms are then apt to be confused with those of dry pleurisy. The menstrual period may cause the discomfort to become worse, but this is a variable feature.

I should expect that the ligaments of Astley Cooper are at fault but I am not clear as to their exact distribution or as to their connexions with the rib periosteum. Needless to say, intestinal stasis has been suggested to me as a factor, but seeing that immediate, and in time permanent, relief is afforded by a bandage lifting up the flabby tissues (the addition of belladonna plaster only acting as a form of support), one may put this out of court and rely on some form of strain as the chief, if not the only, cause. The patches of periosteal thickening I have only felt and have not tried to verify by X ray examination. Occasionally I have given a salicin mixture, but the efficacy of this is very doubtful. I have not noted that any particular group of manual labour has predisposed to the condition, but have no doubt as to the value of a cotton-wool pad and bandage as the essential treatment. I am, Sir, yours faithfully,

Lancaster, Sept. 11th, 1914. W. H. C.

Obituary.

JOHN TANNER, M.A., M.D. ST. AND., M.R.C.P. EDIN., M.R.C.S. ENG., L.S.A., L.F.P.S. GLASG., &c.

Dr. John Tanner died in London recently at the age of 79. He took the diploma of L.F.P.S. Glasg. and L.M. in 1860, the L.S.A. in the same year, the M.R.C.S. Eng. in 1861, and graduated as M.D. at St. Andrews University in the following year. In 1869 he became M.R.C.P. Edin. He was a Past-Master of the Barber-Surgeons Company, and physician to the Royal Society of Musicians. He was educated at Guy's Hospital and at Paris. He had held the positions of deputy medical officer to the Horsemonger-lane Gaol, assistant physician to the Metropolitan Free Hospital, and medical officer of the Royal South London Dispensary. Thirty-five years ago he was also physician for the diseases of women and children at Farringdon General Dispensary, obstetric physician to the Lying-in Charity, Holborn, and physician to the Rev. C. H. Spurgeon's Metropolitan College and the South London Society of Jews. He was the author of "On Practical Midwifery and Obstetrics," and contributed papers to the medical journals on psoriasis, hysterical aphonia, and hysterical vomiting.

ROBERT HAMILTON, F.R.C.S. ENG., L.S.A.

THE death of Mr. Robert Hamilton, late of Liverpool, occurred at the beginning of the month in Ireland in his eighty-eighth year. He had lived in retirement for 20 years, but his long practice and services in the Liverpool council will be recalled by many old residents in Liverpool. When he was chairman of the health committee the present city fever hospitals were planned and built, and the Royal Southern Hospital, of which he was senior surgeon, owes much to him. In his surgical wards and operations he was an energetic supporter of Lister's teaching. He held the appointment of honorary assistant surgeon to the Liverpool Eye and Ear Infirmary in 1854, and in 1861 he became F.R.C.S. Eng. by examination, having taken the membership 12 years earlier. He also held the position of honorary surgeon to the Liverpool Northern Dispensary and was a Fellow of the Royal Medical and Chirurgical Society. He contributed to the medical press papers on the Employment of Tannic Acid in Some Diseases of the Eye and Eyelids, on Carbolic Acid in Surgery, and on the After-treatment of Large Amputations.

GEORGE BORLASE HICKS, L.R.C.P. EDIN., M.R.C.S. ENG., L.M.

THE late Mr. Hicks came of an old Cornish family, to which the famous Hicks Pasha belonged, and was born near Exeter in 1828. Coming to London, he acted as assistant from 1848 to 1851 to Dr. William Cooke, of Trinity-square, a well-known and able practitioner, who founded in 1819 the Hunterian Society. Mr. Hicks afterwards studied at Charing Cross Hospital, and obtained his diploma in 1858. He practised for many years in Amhurst-road, Hackney, winning the esteem of a large circle of patients and friends. Two publications came from his pen, one on the treatment of epilepsy, in which he had some success, and a second on the place of alcohol in health and disease. A strong, wiry man of small stature, his powers gave way very slowly to the onset of age, and the end came gradually on August 30th, in his eighty-seventh year.

Mr. Hicks had been long connected with the Hunterian Society, and had filled the office of vice-president. The jubilee of that society saw its founder, Dr. Cooke, still in office, and now when its centenary is nearly reached we lose in Mr. Hicks probably the last person who knew the founder in his active days.

CHARLES PATTON KEELE, M.R.C.S. ENG., L.S.A.

THE death occurred on August 29th of Mr. C. P. Keele at his residence, Prospect-place, Southampton, at the advanced age of 96 years. He had practically lived in Southampton all his life. He took his diplomas in 1840, after being trained at University College, London. At one time he was surgeon to the old borough gaol. In his earlier days he was a keen and experienced yachtsman. He married in Paris in August, 1854, Miss Elizabeth Leveson-Gower, who died in 1875. He leaves three sons, one of whom is a medical man at Southampton, and two married daughters.

AMITY AT THE BLACKPOOL HOSPITAL.—Our readers are familiar with the late unfortunate situation at Blackpool, to which we have referred on several occasions. The dispute is now happily a thing of the past. At an adjourned meeting of supporters of the hospital held in the committee room of the town hall on Sept. 11th Dr. L. M. McIntosh and Mr. R. H. W. Dunderdale accepted seats on the board of management, and the honorary medical staff will continue their good work. We congratulate all concerned on this settlement.

THE WAR.

FREE MEDICAL ATTENDANCE FOR THE DEPENDENTS OF MEN ON ACTIVE SERVICE.

WE have the greatest pleasure in publishing the following letter from Mr. J. A. Pease, the President of the Board of Education, which requires from us no comment, so clearly is its message expressed. We congratulate the British Medical Association and the Pharmaceutical Society upon their practical interpretation of the general desire of both professions.

To the Editor of THE LANCET.

Board of Education, S.W., 17th September, 1914.

DEAR SIR,—The public will be glad to learn that a scheme has been devised for providing wherever practicable free medical attendance with medicine and appliances to those dependents of soldiers and sailors serving with the colours whose circumstances are such as to render them not unsuitable recipients.

The scheme originated in an offer made by the British Medical Association and the Pharmaceutical Society of Great Britain, who recently informed the Government that, in view of the marked desire shown by medical men and pharmacists throughout the country to help in the present crisis, they felt justified in promising the coöperation of their professions in a scheme for providing medical attendance without charge, and medicine and appliances at cost price.

This generous offer has been gratefully accepted by the Government, who fully recognise the magnitude of the sacrifice which it will entail on the two professions, and the expenditure and labour involved on the part of the British Medical Association and the Pharmaceutical Society. I am glad to say that the Executive Committee of the Prince of Wales's Fund have decided to defray the cost of medicine and appliances supplied in connexion with the scheme, so that the benefits of the scheme will be available entirely free of cost to those for whom they are intended.

The Central Committee for the Prevention and Relief of Distress have set up the following special subcommittee to bring the scheme into operation on a properly organised and comprehensive basis; it includes representatives of the British Medical Association and of the Pharmaceutical Society, and also of the National Health Insurance Commission, a department whose experience will be helpful in bringing this scheme into operation.

Duke of Devonshire, Chairman.
Dr. C. Addison, M.P., Parliamentary Secretary of the Board of Education, Vice-Chairman.
Dr. Alfred Cox, Medical Secretary of the British Medical Association.
Mr. W. S. Glyn-Jones, M.P., Parliamentary Secretary of the Pharmaceutical Society.
Dr. J. A. MacDonald, Chairman of Council of the British Medical Association.
Dr. B. A. Richmond, Secretary of the London Panel Committee.
Mr. S. P. Vivian, Assistant Secretary of the National Health Insurance Commission (England).
Mr. J. Smith Whitaker, Deputy Chairman of the National Health Insurance Commission (England), and Member of the National Health Insurance Joint Committee.
Mr. Edmund White, President of the Pharmaceutical Society.
Mr. W. J. U. Woolcock, Secretary of the Pharmaceutical Society; with Mr. J. A. Barlow, of the Board of Education, and Mr. J. Rae, of the National Health Insurance Commission, as Joint Secretaries.

The British Medical Association and the Pharmaceutical Society are now communicating the arrangements proposed to the individual members of the professions, and are inviting their coöperation. The subcommittee will shortly make a further announcement on the subject, and will as soon as possible inform local relief committees of the names of those doctors and chemists who offer their services under the scheme and of the machinery for putting it into operation.

Any communications with regard to the scheme should be addressed to the "Secretaries of the Subcommittee on Medical Provision for Dependents of Men Serving with the Colours, Wellington House, Buckingham Gate, London, S.W.," or in the case of doctors or chemists to their respective professional associations. I am, Sir, yours faithfully,

(Signed) JOSEPH A. PEASE.

GOVERNMENT AND THE RELIEF OF DISTRESS.

The Government Committee on the Prevention and Relief of Distress Caused by the War continues to organise and advise local committees formed for the actual carrying out of the relief work rendered necessary by the situation, the Local Government Board and the Board of Education being the principal Government departments coöperating with the committee in this task. Local committees are particularly reminded that this national organisation has been formed for the purpose of dealing with distress arising out of the war and not with cases of ordinary poverty. It may be difficult to discriminate between the two in all cases, but the guardians will assist by supplying information as to their own cases. At any rate, it is not intended that the normal operations of the Poor-law authorities should be superseded, and where the guardians may rightly have stepped in temporarily to administer relief in war cases, such relief is to be kept distinct from ordinary Poor-law relief. With this excellent object in view the Local Government Board has informed guardians that money which they have spent since war began in relieving the dependents of soldiers and sailors, not before in receipt of relief, will be refunded to them out of the National Relief Fund, and that when this repayment has been made the names of those who have received such relief, and all entries identifying them, are to be erased from the guardians' records. Further, a statement in prescribed form is to be sent to all persons so relieved by the guardians to inform them of this, and to tell them that they are to regard themselves as having received assistance from the Prince of Wales's Fund and not from the Poor-law.

Local committees are reminded that it is their duty to coördinate relief agencies in their districts with a view to preventing overlapping on the one hand and the overlooking of deserving cases on the other. The supplying of work paid for by wages is referred to as the best form of relief for those whom war has thrown out of work, and in this branch of relief the Labour Exchanges are to coöperate. Pecuniary relief is not to be given to those for whom suitable work is available or, until others are provided for, to those to whom enlistment in the army, navy, or territorial forces is open.

No doubt difficulty has arisen owing to the Government Committee being insufficiently informed as to local conditions, which must necessarily change from week to week, and a lack of uniformity has been observed in the operations of local committees carrying out organisation of a complex character outside the range of their members' ordinary experience. For these reasons the committee, by circulars dated Sept. 5th, has stated that local correspondents will be selected by the Intelligence Department of the Local Government Board, who will report to the Board as to unemployment and distress in their districts, and also collect information of use to the local committees, and that experienced officers of the Local Government Board, Board of Education, and National Health Commission will be appointed to act as inspectors under the Government Committee. The latter, besides reporting to that body, will advise and assist local committees in organising relief. Further, the Local Government Board calls the attention of town and district councils to what may be done for the relief of distress and the benefit of the working classes under the Housing Acts, with special reference to the new statute which it describes as "The Housing (No. 2) Act of this Session." The idea here is to utilise any sums made available under the Act for the joint purposes of providing improved housing accommodation and of mitigating unemployment in the building trades.

The functions performed by the Board of Education in connexion with the relief of distress arising out of the war have been alluded to. These are largely concerned with the guidance of local education authorities as to the provision of meals for children, and it is to be noted that the Board of Education suggests that the organisation instituted for the benefit of children attending elementary schools may be used for the feeding of children not on the schools books if it be found desirable. It is recommended by the Board that the organisation of the provision of children's meals should be in the hands of central school canteen committees, which, if not already existing, should be appointed by the local education authorities, and should include members or representatives of the authority and of the local relief committee. The canteen committees, the Board advises, should avail themselves of the assistance of the school medical officers, and keep in close touch with the local relief committees.

Another department advising local committees is the Board of Agriculture and Fisheries, which calls attention to means which may be taken to assist workers to add to their food-supply in country districts by cultivating allotments. The suggestion is that landowners should provide land free of rent, rates, and taxes for one year, and that local committees should supply technical advice, organise a supply of seedling plants, provide a form of agreement, and otherwise take steps to assist those willing to work to provide themselves with additional food.

SANITATION AND THE RECRUIT.

Questions in the House of Commons on Sept. 14th drew attention to the accommodation provided for the mobilised Territorial Force and for recruits of the new army, and a number of statements have appeared in the press criticising the sanitary arrangements which have been made for the protection of the health of the new forces. No doubt at the moment the depôts throughout the country are overcrowded with recruits, and camps for the new army are swamped with young men unaccustomed to military life, while Territorials on coast defence duty are many of them billeted for the time being in places where their presence causes overcrowding. Such temporary inconveniences are inevitable when a nation which has committed its Government to a military policy involving the existence of a small regular army suddenly wakes up to the need for a million or so of trained soldiers. Things being as they are for the moment, it is obvious that many insanitary conditions must have arisen, but it is useless for critics to insist on the need for "well thought out schemes" and for "exact division of responsibility" when a large army is being improvised at the rate of thousands a day, when, in fact, on some individual days many more recruits have been passed into the Army and Territorial Force than are usually dealt with in a year. There will be time enough later for establishing a general system of sanitary work and supervision in which military and civil frontiers are clearly defined. At the moment, as a correspondent pithily puts it, what we want is the best kind of muddling through, and there is evidence that this is being done in many places; and as each week passes the situation ought to improve, as the Local Government and army sanitary inspections are carried out and steps are taken locally to bring civil and military authorities together to settle what is wanted. This is emphatically not the time when local authorities should decline responsibility for any work in which they could be useful, such as by doing extra scavenging where soldiers are billeted, laying new water mains, or lending isolation hospitals for infectious cases among the troops. A definite military camp is, of course, under Army control, while billeting means putting the troops on the civil population, in which case the latter must take all incidental consequences; but even in the case of camps, the civil authorities can do a great deal to help, and the line adopted by the Local Government Board and the War Office is clearly the right one—viz., to get the medical officers of health and local medical officers in charge of troops into consultation, and the necessary measures settled by the authorities on the spot. No doubt there is a dearth of expert sanitary officers on the military side, but this, again, is inevitable at the moment, and presumably the Army Medical Service will take steps to meet the deficiency. The thing to remember is that in war private conveniences are in abeyance; individuals have to put up with risks and losses and inconveniences, and so must localities and local authorities. Until there is good cause for accusing those in responsible positions of incompetence or neglect, it is right to assume that they realise the immense importance of getting sanitary conditions into a satisfactory state and are doing the best that circumstances allow.

THE WAR AND THE DRUG-SUPPLY.

The scarcity of various important drugs of continental origin is becoming more pronounced day by day, and it is quite conceivable that before the end of the war supplies of some of them will be exhausted. Even already difficulty is being experienced in the wholesale market in supplying medicinal products of German manufacture; and although no instance appears to have been reported as yet of inability to procure the small quantities of commonly prescribed German products required for immediate use in pharmacies, the scarcity in the

central market must in course of time result in pharmacists being unable to replenish their depleted stocks and consequently to dispense such prescriptions as include among their ingredients any of the drugs in question. This country has hitherto been dependent almost entirely upon Germany for a large number of extremely valuable drugs, notably those complex organic compounds which in comparatively recent years have brought about great changes in the practice of prescribing. Antipyretics, analgesics, and sedatives which were relied upon by an older school of practitioners have been largely displaced by a host of newer remedies, nearly all of German origin, and the stocks of drugs of this class are naturally very low. Some idea of the relative position of the supply and demand of various drugs can be obtained from the increases in market quotations. Thus acetyl-salicylic acid is about five times the value quoted before the war; antipyrin has nearly doubled in price, as also has sulphonal; antifebrin is at least twice as dear as it was; and, in fact, most of the coal-tar products have advanced in price to a very serious extent. Chloral hydrate has trebled in value, cocaine has doubled, and salicylates are very much dearer. These are only a few examples, but something like a hundred drugs have advanced in price considerably as a direct consequence of the war. It is satisfactory to know that some of our British firms have already begun the manufacture of several chemical products hitherto obtained from Germany, and it is to be hoped that their enterprise will receive adequate encouragement. It is also understood that an English house is prepared to manufacture organic arsenic compounds, and it is not by any means improbable that before the war is over supplies of the most famous compound in this series will be procurable from an English laboratory. But the effect of the war is not felt solely in the sphere of manufactured drugs. In Belgium, Germany, and France are produced many of the most important of the vegetable drugs, and new crops of some of them were awaiting harvest when the call to arms removed labourers from the fields. Aconite, chamomiles, arnica, belladonna, digitalis, colchicum, gentian, valerian, lavender, conium, and other vegetable drugs are grown in the parts of Europe which are in or near the zone of hostilities, and consequently there is bound to be a scarcity in the supply of all of them.

THE WAR AND DISLOCATION OF PRIVATE PRACTICE.

The depletion of the staffs of the London hospitals, which has its parallel in many of the great provincial institutions, has been the subject of anxious public comment, but it has not been recognised until lately that the dislocation of private practice, which has occurred as the outcome of the mobilisation of our army, is every whit as serious. The question is how far this dislocation is necessary at the present moment. No one whatever is to blame for what was done; it was absolutely right that on mobilisation all the machinery for the defence of the country should be employed. But when the fears of an invasion of this country have definitely disappeared it is reasonable to suppose that some of the precautions against that contingency will be relaxed. The health of the population of this country is a permanent charge upon the energies of the medical profession, and when the extraordinary charge upon those energies, due to the war, is no longer urgent, as many civilian practitioners as possible should be released from their military duties. The War Office knows now the material upon which it can count, and a recall would lead to an immediate return to the conditions after mobilisation, and this could be effected with the minimum of trouble. We understand that the Executive Committee of the General Medical Council is taking notice of the matter this week, and may suggest that some central committee, formed of medical men or on which medical men would be fully represented, should assist the War Office with expert advice. The public health may suffer needlessly if a large body of medical men are kept from duties which must always be performed in order to discharge functions whose need has for the time being disappeared or has not yet arisen. But every medical man will understand that, even if he be temporarily released, he must hold himself in readiness to return to the flag. The vast task ahead of the British Army, which is suggested by all thoughtful men, whether in posts of authority or not, indicates sufficiently that every available medical man may be called upon to do his share.

SCOTTISH MILITARY GENERAL HOSPITALS.

There are four Scottish Military General Hospitals, situated the first at Aberdeen, the second at Edinburgh, and the third and fourth at Glasgow.

First Scottish General Hospital.—The mobilisation of this unit was completed in the time allowed by the scheme previously submitted to the Army Council. The officer in command is Lieutenant-Colonel P. Mitchell, Captain J. Smart and Quartermaster and Hon. Captain J. Callan being attached. On mobilisation the following physicians and surgeons form the staff. Lieutenant-Colonels: Dr. J. Marnoch, Dr. A. H. Lister, Dr. A. W. Mackintosh, and Dr. J. M. Booth. Majors: Dr. R. G. McKerrow, Dr. H. McL. W. Gray, Dr. G. Gibb, Dr. A. R. Galloway, Dr. C. H. Usher, Dr. W. R. Pirie, and Dr. D. W. Geddie. Captains: Dr. J. R. Levack, Dr. H. Peterkin, Dr. J. M. P. Crombie, Dr. A. M. Stalker, Dr. J. M. Whyte, Dr. A. Don, Dr. C. Kerr, Dr. A. P. Low, Dr. A. W. Falconer, Dr. G. H. Colt, Dr. A. Mitchell, Dr. A. McGillivray, Dr. G. M. Duncan, Dr. W. C. Souter, Dr. J. Johnston, Dr. W. Brown, and Dr. J. M. McQueen.

Second Scottish General Hospital.—During time of peace the office of this hospital is at 4, Lindsay-place, Edinburgh. Lieutenant-Colonel Sir Joseph Fayrer is in command and Captain D. J. Graham and Quartermaster and Hon. Lieutenant W. C. Baker are attached. The unit is composed of 43 non-commissioned officers and men with 66 voluntary aid detachment men enlisted on mobilisation, and when called up the nursing staff consists of a matron and 91 sisters and nurses. All are warned and ready for duty. In accordance with the scheme of mobilisation for this hospital the extensive buildings of the Craigleith poorhouse, some two miles from Edinburgh, quite in the country, in beautifully laid out grounds, have been taken over and converted into a military hospital. It commands on the north a view of the Forth and on the south a magnificent panorama of Edinburgh. On the order to mobilise the 700 odd pauper inmates were transferred to Craiglochart poorhouse, which procedure occupied three days and required the assistance of most of the permanent personnel of the unit to help in carrying out the evacuation of the poorhouse. On the fifth day of mobilisation the unit marched and took up their quarters and opened the hospital with 48 beds and 10 nurses. In connexion with the building there is a hospital for 150 beds, and these were ready for patients five days after coming in. Additional cooking accommodation was also provided. In an open space in the centre of the building a large operating theatre, dental room, and X ray room completely equipped have been built. Electric light and power have been brought into the building, and covered corridors for conveying patients from the theatre to the hospital have been erected. There are in connexion with the theatre sterilising rooms for instruments and for basins, &c., and sterile water is laid on in the theatre. A large barn has been converted into a central reception room, to which

all patients are taken in the first instance and from there distributed to their wards. This room is completely equipped with stretchers, dressings, medicines, &c., suitable for out-patients and for minor surgery. In the main hospital there are a completely equipped dispensary and pathological laboratory, and adjacent to the building is a mortuary. The conservancy arrangements and supplies of hot and cold water are excellent. A large disinfector has been built in, adjoining the furnace house. A special venereal department has been organised, with separate operating room, baths, and irrigators. At some distance from the main building an isolation ward has been fitted up. In connexion with the hospital is an ambulance train for 50 lying-down cases. The personnel of this train consists of two *en suite* officers, two sisters, four nurses, and 12 Red Cross orderlies. Near the hospital on the main line a small station has been built, to which the train brings the sick and wounded, and the Red Cross ambulance service detrains them and brings them to the hospital. On mobilisation the following physicians and surgeons form the staff. Lieutenant-Colonels: Dr. J. M. Cotterill, Dr. C. W. Cathcart, Sir R. W. Philip, and Dr. F. M. Caird. Majors: Dr. W. Russell, Dr. G. A. Berry, Dr. J. G. Graham Brown, Dr. J. W. Hodsdon, Dr. G. L. Gulland, Dr. D. Wallace, C.M.G., Dr. J. D. Comrie, and Dr. F. D. Boyd, C.M.G. Captains: Dr. H. J. Stiles, Dr. R. A. Fleming, Dr. H. Alexis Thomson, Dr. H. G. Langwill, Dr. A. Miles, Dr. Harry Rainy, Dr. Logan Turner, Dr. D. C. Watson, Mr. W. Guy, Dr. W. T. Ritchie, Dr. J. W. Dowden, Dr. E. Bramwell, Mr. A. S. Skirving, C.M.G., Dr. J. G. Cattanach, Mr. G. L. Chiene, Dr. E. Matthew, Dr. W. J. Stuart, Dr. J. Eason, Mr. E. W. Scott Carmichael, and Dr. J. W. Simpson. Of these the following 18 have been called up: Lieutenant-Colonel Cotterill (medical officer in charge), Lieutenant-Colonel Cathcart, Major Wallace, Major Boyd, Major Comrie, Captain Thomson, Captain Langwill, Captain Rainy, Captain Guy, Captain Ritchie, Captain Dowden, Captain Bramwell, Captain Skirving, Captain Chiene, Captain Matthew, Captain Stuart, Captain Eason, and Captain Simpson. On Sept. 6th there were close on 300 patients in hospital, which was ready equipped for 200 more, and was expanding daily to 700 beds. During the previous four days 25 operations had been performed for hernia, varicose veins, varicocele, &c. A great deal of work in conservative dentistry has already been done, and very large numbers of soldiers and recruits are taking advantage of this department.

Third Scottish General Hospital.—During time of peace the office of this hospital is at Yorkhill-parade, Glasgow. The officer in command is Lieutenant-Colonel A. J. Hay and Major B. Riddell and Quartermaster and Hon. Major W. Lee are attached. On mobilisation the following physicians and surgeons form the staff: Lieutenant-Colonels: Dr. S. Gemmell, Dr. R. Stockman, Dr. R. Muir, and Dr. T. K. Dalziel. Majors: Dr. H. Rutherford, Dr. J. H. Nicoll, Dr. W. K. Hunter, Dr. J. M. Cowan, Dr. J. W. Downie, Dr. A. M. Ramsay, Dr. D. Macartney, and Dr. W. MacLennan. Captains: Dr. J. Laurie, Dr. R. B. Ness, Dr. J. McC. Johnston, Dr. J. Carslaw, Mr. J. Towart, Dr. J. Morton, Dr. A. A. Young, Dr. W. W. Christie, Dr. A. MacLennan, Dr. E. G. Fortune, Dr. J. C. McChire, Dr. R. Fullarton, Dr. J. Gilchrist, Dr. A. H. Edwards, Dr. M. L. Taylor, Dr. J. Gracie, Dr. L. Findlay, Dr. C. C. Cuthbert, Dr. A. W. Harrington, and Dr. J. R. C. Greenlees.

Fourth Scottish General Hospital.—During time of peace the office of this hospital is at Yorkhill-parade, Glasgow. The officer in command is Lieutenant-Colonel (Honorary Surgeon-Colonel) A. Napier, V.D., and Major D. O. MacGregor and Quartermaster and Honorary Lieutenant P. A. Conacher are attached. On mobilisation the following physicians and surgeons form the staff:—Lieutenant-Colonels: Dr. J. C. Renton, Dr. J. Barlow, and Dr. G. S. Middleton. Majors: Mr. R. H. Parry, Dr. J. H. Pringle, Dr. T. K. Monro, Dr. J. G. Andrew, Dr. J. B. McK. Anderson, Dr. A. F. Fergus, Dr. J. K. Love, and Dr. A. Young. Captains: Dr. J. Hamilton, Dr. A. N. McGregor, Dr. A. B. Kelly, Dr. A. S. Tindal, Dr. D. W. Russell, Dr. D. Lamb, Dr. J. Maclean, Dr. G. B. Buchanan, Dr. H. Walker, Dr. F. Macrae, Dr. E. Mackay, Dr. J. C. Macewan, Dr. J. D. Holmes, Dr. J. Henderson, Dr. J. R. Chalmers, Dr. A. Fraser, Mr. D. Fyfe, Dr. J. G. Tomkinson, and Dr. R. B. Carslaw,

MEDICAL CASUALTIES AT THE FRONT.

The following additional names of medical men have been announced in the lists of casualties among officers on active service:—*Killed* (in the Cameroons): T. P. Fraser, West African Medical Staff. *Wounded:* Staff-Surgeon Thomas Aubrey Smyth, H.M.S. *Pathfinder;* Captain G. R. Painton, Royal Army Medical Corps.——In the list of casualties published last week, Captain G. H. T. Brown, Royal Army Medical Corps, should read Captain T. W. Browne, Royal Army Medical Corps.

THE RELIEF OF REFUGEES.

Our Special Sanitary Commissioner, who has been making inquiries into the hygienic and general arrangements which have been madefor the reception of war refugees from the continent, writes:—

During the past few weeks the arrival of refugees from Belgium, and to a less extent France also, has grown from a mere local question and a matter of private benevolence into a great national problem. Arriving at first in driblets and disembarking for the most part at Folkestone, efforts were made to deal with them as they landed. The War Refugees Committee and other societies voluntarily constituted to help the victims of the war endeavoured to provide accommodation for them at Folkestone. But all these well-intentioned efforts were soon swamped by the magnitude of the distress with which they had to cope. Fortunately, not only the public, but the Government also, felt that the least we as a nation could do, especially to the Belgians, was to see to it that every war victim should be treated as a comrade, and a home and a warm welcome provided, more especially for his suffering wife and children. On all sides came offers of help, of hospitality, and a distracting bombardment of boxes, hampers, bundles, old and new clothes, and perishable articles of food, such as a fresh salmon, wrapped up in an old great-coat. Another parcel of old clothes had a grouse concealed in the centre and a £5 note pinned on the outside. But there was no staff to deal with all these things and no premises in which to sort and distribute them. Fortunately the General Accident, Fire, and Life Assurance Corporation not only lent a staff of 40 to 50 paid clerks, but premises situated at Aldwych, and therefore in a conveniently central position. Hardly had these offices been opened than about a thousand letters were received in a day, and the daily average soon rose to 5000. Then came the crushing official announcement that some 50,000 to 60,000 refugees might be expected in the course of ten days. No private enterprise or charity could cope with such a deluge; and it came as a relief to the whole country to hear on Sept. 9th that the Government had taken the matter in hand, availing itself, at the same time, of such organisations as already existed, notably the War Refugees Committee. Obviously no private charity could deal with a mass of people that may equal in numbers two army corps. Fortunately, the State now controls the railways, so that the transport of these refugees can be managed as if they were troops. Already Folkestone is abandoned, and the ships bringing the refugees will be for the most part directed to Tilbury. At first they will be sent to vast establishments, like empty workhouses, asylums, barracks, warehouses, any premises, in fact, that can be secured, so that the new arrivals may at least have a roof over their heads, a bed, and food. But this, it is hoped, will be purely temporary. It will render the sorting, the classification, and above all the medical examination of the refugees more easy before they are allotted to the various families who have offered to receive them as guests. There can be no doubt that such a great influx of sorely tried people from the seat of war must be accompanied with the danger of spreading disease. Not that this would make us shrink from accomplishing what is obviously our duty, and this in the most warm-hearted and generous manner possible; but for the sake of the refugees themselves, as well as to protect others, there can be no alternative to taking the best precautions possible. As matters now stand all who land from the war-affected areas, whether ordinary passengers or refugees, are cursorily and rapidly inspected by the medical officers who meet the boats. Then a more thorough

examination takes place when the refugees reach their first shelter. As yet, of course, the whole organisation to meet this emergency is only just coming into existence. In a short time, however, there will probably be a good deal to say from the medical and sanitary point of view. Nevertheless, though considerable difficulties are sure to arise, profound admiration and sympathy for what the Belgians have done and suffered should make us succeed in offering them a wide hospitality.

THE EMPLOYMENT OF UNQUALIFIED DEPUTIES.—Certain medical practitioners on leaving home in connexion with duties imposed upon them by the war have left their practices in the hands of unqualified men, assistants, or dispensers, owing allegiance perhaps to distant practitioners whose supervision can only be of a perfunctory nature. The subject has been discussed at the recent executive meeting of the General Medical Council, and the clear letter which has been sent from the Council to the practitioners concerned is published in our correspondence columns. It cannot be too strongly said that there is no justification for entrusting civil practice to unqualified persons, and that any practitioner who does so incurs the gravest responsibilities. That such irregular conduct is quite unnecessary is proved to us by an inquiry into the experiences of the Scottish Medical Service Emergency Committee. This committee was constituted for the purpose of assisting to meet the immediate difficulties, in regard to medical practice among the civil population, arising from the departure of practitioners summoned to take up military duty. It is understood that some 300 Scottish practitioners have been thus called away from their practices, and more are liable to be summoned at short notice. In large towns these difficulties are little felt, for the practitioners remaining have willingly undertaken to attend to the work and to safeguard the interests of their absent colleagues. But in smaller places and in rural districts such friendly arrangements are less easily made. The committee, which was constituted in the third week in August, has received communications from medical practitioners in Scotland desirous either of obtaining or offering professional help in the circumstances above indicated, with the result that more satisfactory applications for employment have been received than vacancies notified. It is clear that medical men, either by local coöperation, by use of the ordinary agencies for the supply of qualified assistance, or by the intervention of committees working on the lines of the Scottish Medical Service Emergency Committee, can obtain qualified locum tenents, so that there is no excuse for the commission of the serious professional irregularity of employing unregistered persons to attend to their practices.

THE CHOLERA CORPS.—With regard to the proposed Cholera Corps Service with the British or Russian Red Cross, Dr. White Robertson reports that up to date 17 doctors, 42 nurses, and 3 cooks have applied. The suggestion is, with a view to saving expense, that these be trained in advance in units of one doctor and two nurses and enrolled and despatched as occasion arises. So far, however, no reply to the application has been received from the British Red Cross Society.

A CANADIAN HOSPITAL.—The Canadian War Association has arranged to equip and maintain a hospital of 50 beds for 12 months. Sir William Osler and Mr. Donald Armour have taken charge of the organisation. The hospital, the "Queen's Canadian Military Hospital," will be under the control of the War Office, and may be enlarged to 100 beds if necessary. The equipment and maintenance will require about £20,000, and funds are needed for the general work. Subscriptions can be sent to the honorary treasurer, Mr. G. C. Cassels, Bank of Montreal, 47, Threadneedle-street, London, E.C., and general inquiries should be made from Mr. J. G. Colmer, C.M.G., Westminster Palace Hotel, Victoria-street, London, S.W.

THE National Indian Association appeals for clothing and hospital comforts for the use of the Indian troops in the field. Any contributions, either in the form of clothes or money, should be sent to Miss Beck, honorary secretary, 21, Cromwell-road, London, S.W., the address of the Educational Adviser to Indian Students and of the National Indian Association.

THE UNIVERSITY OF BIRMINGHAM AND THE WAR.—At a special meeting of the Council of the University held on Sept. 4th the following resolutions were unanimously adopted:—

1. That the University will as far as possible continue its work for the benefit of those students who are prevented from undertaking active service in the army or navy, but that the University's advice to members of the staff, students, laboratory and other assistants, and college servants, who are of suitable age and physically fit, is that they should enlist and serve their country. The students who propose to enlist should consult the Vice-Principal or the Dean of the Faculty of Medicine, and (if minors) should obtain the written consent of their parents or guardians before sending in their applications.

2. That, with a view to encouraging enlistment, the University undertakes to allow leave of absence to any of the above-mentioned persons during their naval or military service; that they be reinstated on their return with no loss of position or emoluments consequent on their enforced absence; that the Council pay them (or such other person or persons as they may appoint) such sums as with the pay and allowances they receive from the Government will make up their full salary or wages; and that students shall be entitled to postpone any scholarships or other aids which they may hold, and, where possible, may be allowed to shorten the time of attendance at lectures necessary for a degree, without, however, the remission of any essential requirements in respect of examinations prescribed for their course.

3RD RESERVE EAST ANGLIAN FIELD AMBULANCE.—Last week we published a letter from the Acting Officer Commanding 3rd E.A.F.A. Home Service, stating that medical men were required to complete the establishment of this unit. We now learn that there are several vacancies in the 3rd Reserve East Anglian Field Ambulance, and information as to pay, training, service, &c., may be obtained from the Officer Commanding, Drill Hall, Walthamstow.

THE British Red Cross Society and St. John Ambulance Association are in immediate need of further funds, and ask us to further their appeal for generous support. Subscriptions should be sent to Lord Rothschild, Devonshire House, Piccadilly, London, W., and are acknowledged daily in the *Times*.

THE WOMEN'S HOSPITAL UNIT.—A women's hospital unit left on Tuesday morning last to take charge of a hospital which has come into being in Claridge's Hotel, Paris. The unit consisted of women surgeons, anæsthetists, dressers, a staff of trained nurses, and some male orderlies, and is under the auspices of the St. John Ambulance Association. The unit was organised by Dr. Louisa Garrett Anderson, Dr. Hazel H. Cuthbert, Dr. Flora Murray, and Dr. Louisa Woodcock.

IN the list of the medical and surgical staff of the First Eastern General Hospital which appeared in last week's LANCET the name of Dr. J. Gutch should have been included among those of the rank of captain.

THE NATIONAL RELIEF FUND.

SUBSCRIBE to the Prince of Wales's National Relief Fund.

To H.R.H. THE PRINCE OF WALES,
BUCKINGHAM PALACE, LONDON.

I beg to enclose £ s. d. as a donation to the National Relief Fund.

Name _____

Address _____

_____

The envelope containing this coupon need not be stamped.

Medical News.

EXAMINING BOARD IN ENGLAND BY THE ROYAL COLLEGES OF PHYSICIANS AND SURGEONS OF ENGLAND.—At the special examination in Practical Pharmacy held on Sept. 10th, the following candidates were approved.

Lindsey Willett Batten, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; William Herbert Blakemore, Manchester University; Frank Bocquet Bull, Guy's Hospital; Ahmed Tayel Dabbous, Liverpool University; Richard Irving Dacre, Bristol University; Thomas William David, John Kenyon Davies, and Cuthbert Lindsay Emmerson, St. Bartholomew's Hospital; James Butler Fairclough, Leeds University and Guy's Hospital; Cecil Cantilupe Harrison, B.A. Cantab., Cambridge University and St. Mary's Hospital; Geoffrey William King, Guy's Hospital; James Stuart Leslie, London Hospital; George Samuel Bousfield Long, Guy's Hospital; William Kenneth Armstrong Richards, Bristol University; John Douglas Rutherford, B.A. Cantab., Cambridge University and St. Bartholomew's Hospital; John Hunter Stewart, University College Hospital; Cuthbert Shaw-Crisp, St. Mary's Hospital; and William Godfried Lorenz Wambeek, Middlesex Hospital.

SOCIETY OF APOTHECARIES OF LONDON.—At examinations held recently the following candidates passed in the subjects indicated:—

Surgery.—H. Dudley (Sections I. and II.), University College Hospital; R. J. Hearn (Sections I. and II.), Cambridge and Guy's Hospital; A. R. Jennings (Section II.), St. Bartholomew's Hospital; W. M. Lansdale (Sections I. and II.), Guy's Hospital; R. H. Leigh (Sections I. and II.), L. E. Pimm (Sections I. and II.), and R. V. Powell (Sections I. and II.), King's College Hospital; and C. J. B. Way (Sections I. and II.), Middlesex Hospital.

Medicine.—D. Aucutt (Section II.), King's College Hospital; J. C. P. Bayley (Section I.), Manchester; P. H. Burton (Section II.), London Hospital; C. H. Fischell (Section I.), Middlesex Hospital; R. J. Hearn (Section II.), Cambridge and Guy's Hospital; W. M. Lansdale (Sections I. and II.), Guy's Hospital; R. H. Leigh (Sections I. and II.) and R. V. Powell (Sections I. and II.), King's College Hospital; and C. J. B. Way (Sections I. and II.), Middlesex Hospital.

Forensic Medicine.—H. H. Fairfax, Charing Cross Hospital; C. H. Fischell, Middlesex Hospital; W. M. Lansdale, Guy's Hospital; R. H. Leigh and R. V. Powell, King's College Hospital; and C. J. B. Way, Middlesex Hospital.

Midwifery.—C. H. Fischell, Middlesex Hospital; W. M. Lansdale, Guy's Hospital; R. H. Leigh, King's College Hospital; G. D. Newton, Durham; R. V. Powell, King's College Hospital; and C. J. B. Way, Middlesex Hospital.

The Diploma of the Society was granted to the following candidates, entitling them to practise medicine, surgery, and midwifery:—D. Aucutt, H. Dudley, R. J. Hearn, A. R. Jennings, W. M. Lansdale, R. H. Leigh, G. D. Newton, L. E. Pimm, R. V. Powell, and C. J. B. Way.

DONATIONS AND BEQUESTS.—The late Mr. Brownrigg Pattinson, of Applethwaite, Westmorland, left large bequests for charity, including £2000 each to Kendal Memorial Hospital, Meathop Sanatorium, and the Orphans' Home, Kendal.

GRESHAM LECTURES, 1914.—Four lectures will be delivered on Heredity, on Tuesday, Oct. 6th; Wednesday, Oct. 7th; Thursday, Oct. 8th; and Friday, Oct. 9th, by Dr. F. M. Sandwith, Gresham Professor of Physic. The lectures will be delivered at Gresham College, Basinghall-street, E.C.; they are free to the public, and will begin each evening at 6 o'clock.

ST. MARY'S HOSPITAL MEDICAL SCHOOL.—The work of the school will be carried on without interruption, and all courses of instruction in preliminary, intermediate, and final subjects will begin on Oct. 1st as arranged. The examination for entrance scholarships will be held on Sept. 21st–23rd. Owing to the European war and the absence of certain members of the staff and senior students at the front, the presentation of prizes by Sir Philip Magnus, M.P., announced for October has been postponed.

MIDDLESEX HOSPITAL MEDICAL SCHOOL.—The opening of the winter session 1914–15 will take place as usual on Thursday, Oct. 1st, at 3 P.M., when an address will be given by Dr. C. Hubert Bond and the prizes for the past year will be distributed by Sir John Bland-Sutton in the museum which forms part of the New Institute of Pathology. Owing to the war no formal invitations will be issued, but all who are interested in the hospital and medical school are cordially invited to be present. The annual dinner has been postponed.

THE Huxley Memorial lecture on "Recent Advances in Science and their Bearing on Medicine and Surgery," by Sir Ronald Ross, K.C.B., F.R.S., was to be delivered on Thursday, Oct. 1st, but the delivery has now been postponed to Monday, Nov. 2nd. It will be given in the Out-patients' Hall of Charing Cross Hospital at 3 P.M., and will be open to all members of the profession.

THE LATE DR. W. B. M'QUITTY.—On Sept. 6th, in St. Jude's Parish Church, Belfast, the Lord Bishop of Down and Connor and Dromore dedicated a magnificent three-light memorial window which has been erected by Mr. James M'Quitty to the memory of his deceased sister and two brothers, one of whom was the late Dr. M'Quitty.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

Parliament and the War.

PARLIAMENT has been sitting this week for the purpose of passing various emergency measures required by the war, and for completing the arrangements for bringing the session to an end.

HOUSE OF COMMONS.

WEDNESDAY, SEPT. 9TH.

National Insurance (Navy and Army) Bill.

Mr. WEDGWOOD BENN, in asking leave to introduce a Bill "to amend Section 46 of the National Insurance Act in respect of certain officers, warrant officers, and soldiers," said that its effect would be to permit men enlisting in the new army to be treated in the same way as Territorials who were in employment were treated. If insured before they could continue to be insured, and if not insured before enlistment they need not become insured unless they wished to do so. The Bill also provided that officers who took commissions in the new army might, if already in insurance, continue in insurance.

Mr. WORTHINGTON EVANS remarked that a good many of the men in the new army might be employed persons for the first time. As they would be joining after 16 years of age they would only be entitled to reduced benefits for their payments. It would be quite easy to provide that they would be entitled to be deemed to have joined within 18 months of the passing of the National Insurance Act.

Mr. BOOTH thought that Approved Societies could not be asked to take these new members and give them benefits to which in the ordinary course they would not be entitled. The Approved Societies could not take these new members on in any number unless the Government gave some assistance.

Leave having been granted, the Bill was brought in and read a first time.

THURSDAY, SEPT. 10TH.

Territorials and Vaccination.

Mr. CHANCELLOR asked the Under Secretary of State for War whether he was aware that, on objecting to be vaccinated, a Territorial belonging to the 24th County of London regiment was recently court-martialled for disobeying a battalion order; and whether he would take steps to prevent pressure of this kind from being applied to deprive Territorial recruits of the exemption to what they were by law entitled.—Mr. TENNANT answered: I am not aware of the circumstances mentioned. On the other part of the question I have nothing to add to my previous reply on the subject.

Antityphoid Inoculation.

Mr. CHANCELLOR asked the Under Secretary of State for War whether in view of the fact that typhoid was a disease due to insanitation and preventable by proper sanitary measures, that antityphoid inoculation produced illness which disabled men for days and would therefore weaken our forces, that many men objected to being inoculated, whilst medical opinion was divided as to its value, he would refrain from enforcing it upon unwilling soldiers, thus leaving them fit for their duties in the field.—Mr. TENNANT said in reply: The honourable Member is under a misapprehension. Antityphoid inoculation, whilst encouraged on account of its undoubtedly immense value, is not compulsory in the British Army.

TUESDAY, SEPT. 15TH.

Panel Chemists and Increased Price of Drugs.

Mr. CHARLES PRICE asked the honourable Member for St. George's-in-the-East, as representing the National Insurance

Commissioners, whether he was aware that the war had created a shortage in the supply of upwards of 100 drugs, preparations, and appliances in common use, with consequent great increase in the cost price; that a schedule including only 15 simple drugs had been issued by the Insurance Commissioners with a scheme for making additional payments to panel chemists who were in agreement to supply every demand at drug tariff rates to Insurance Committees; and that Scottish panel chemists had made representations to the Insurance Commissioners that the schedule was totally inadequate and the scheme for increased payment impracticable and illusory; and would he sanction the immediate acceptance by the Scottish Insurance Commissioners of the plan of a special war tariff for drugs and appliances submitted on behalf of the Scottish panel chemists by the Pharmaceutical Standing Committee of Scotland or otherwise secure immediate relief for panel chemists who were suffering hardship from being compelled to continue supplying at much less than cost price.—Mr. WEDGWOOD BENN said in reply: The panel chemists are legally bound to supply drugs and medicines at the tariff prices up to the end of the year; but the Government, recognising that the increase in the cost of certain important classes of drugs would involve hardships to the chemists if they were held strictly to their agreements, took action some weeks ago, and an arrangement has been made after consultation with the Pharmaceutical Society of Great Britain under which the chemists will receive some additional payment over and above the tariff rate in the case of certain drugs which are used on a large scale, and which the Insurance Commissioners were satisfied had increased considerably in price in consequence of the war. This concession was made as an act of grace, and it must not be assumed that the Government can find means of making good the whole of any losses which chemists may suffer as a result of the war in common with other classes of the community. A representation of the nature described in my honourable friend's question has been received, and is now under consideration. The matter is highly complicated and difficult, and in the present state of the information in the possession of the Government it is not possible to say what course may ultimately prove to be the most equitable in all the circumstances.

Territorial Camps and Public Health.

Sir IVOR HERBERT asked the Under Secretary for War whether his attention had been drawn to the danger to the public health caused by the condition of some Territorial camping-grounds; and whether he had any statement to make thereon.—Mr. TENNANT answered: The War Office has been in constant communication with the Local Government Board as to the precautions necessary in connexion with the aggregation of troops, prisoners, and refugees in camps and other places, and on August 31st the Board's medical officer sent a circular letter to the medical officers of health of all sanitary districts inviting them, if there were troops in their districts, to coöperate with the military medical authorities in all sanitary matters connected with the troops. The War Office sent copies of this circular to the general officers commanding-in-chief of all military districts asking these to do all in their power to maintain thorough sanitary supervision. Inspectors of the Local Government Board are now visiting various districts in which troops are congregated, conferring with the military and civil medical authorities, and reporting to the Board on the arrangements made. There appears to be no evidence at present that the condition of any Territorial camping-ground is such as to endanger the public health. If my honourable and gallant friend has such information perhaps he would communicate it to the War Office. Inspections could thus be made and we should be glad to make inquiry, and I am assured we shall have the assistance of the Local Government Board in any inquiry we institute.

Army Medical Officers.

Mr. BRIDGEMAN asked the Financial Secretary to the War Office whether he had received representations of the sense of injustice amongst army medical officers on account of the bounty of £60 being given to medical officers who now joined for the first time and refused to those who had served regularly with Territorial forces; whether he would give the reason for this inequality of treatment; and whether he would reconsider the decision.—Mr. H. BAKER replied: I am afraid that I cannot add to the answer which was given on August 27th last.

The Eyesight of Recruits.

Mr. GRANT asked the Under Secretary for War whether he would consider some relaxation of the tests for eyesight of recruits, so that the wearing of glasses might not wholly debar men from joining His Majesty's army.—Mr. TENNANT answered: This has been considered, but the Army Council have not seen their way so far to grant any relaxation.

WEDNESDAY, SEPT. 16TH.

Medical Men as Volunteers.

Mr. STEWART asked the Under Secretary of State for War what the prospects as to getting appointments were for medical men who had volunteered for service and had been accepted and medically examined by the War Office in August, as there were cases where doctors had, on being accepted, resigned all professional work and found themselves at the moment without either position or income pending the final acceptance of their services by the War Office.—Mr. TENNANT said in reply: About 70 per cent. of some 900 who applied have been employed. I cannot say if or when the remainder will be called upon, but it was made clear to all these gentlemen that their acceptance for service, should they be required, did not place them under any obligation to relinquish their ordinary appointments until actually called upon to serve.

Drugs for Military Hospitals.

Mr. DOUGLAS HALL asked the Financial Secretary to the War Office whether the principal medical officers of military hospitals could be empowered to purchase drugs and surgical appliances locally when urgently needed, in consequence of the large concentration of troops in certain districts, without having to requisition for them.—Mr. H. BAKER replied: By existing regulations this is already authorised in urgent circumstances which do not admit of the usual procedure of requisition.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.

BURROWS, ARTHUR, M.D.Lond., has been appointed Radiologist to the Manchester and District Radium Institute, the Royal Infirmary, Manchester.

CLARKE, A. I., L.R.C.P. & S. Edin., L.R.F.P.S. Glasg., has been appointed Assistant Medical Officer to the Infirmary, Bagthorpe, Nottingham.

COOKSON, HENRY ANSTEY, M.B., Ch.B. Edin., has been appointed House Surgeon to the Torbay Hospital, Torquay.

GORDON, J., L.R.C.P. Irel., F.R.C.S. Irel., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Ballyshannon District of the county of Donegal.

HAMILTON, G., M.B., B.S. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Ashton-under-Lyne District of the county of Lancaster.

HICHENS, WILLIAM, L.R.C.P. Lond., M.R.C.S., has been appointed District Medical Officer by the Redruth (Cornwall) Board of Guardians.

KELLY, G., M.B., B.S. R.U.I., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Belleek District of the county of Fermanagh.

RIVERS, WILLIAM GREGORY, M.B., Ch.B. Edin., has been appointed Senior Medical Officer and Deputy Superintendent to the Cornwall County Asylum, Bodmin.

SYLVESTER, H. M., M.R.C.S., L.R.C.P. Lond., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Leiston District of the county of Suffolk.

WARNOCK, A. H. T., L.R.C.P., L.R.C.S. Irel., has been appointed Certifying Surgeon under the Factory and Workshop Acts for the Trillick District of the county of Tyrone.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

ASHTON-UNDER-LYNE DISTRICT INFIRMARY AND CHILDREN'S HOSPITAL.—Senior House Surgeon. Salary £120 per annum, with board, residence, and laundry.

BANBURY, HORTON INFIRMARY.—House Surgeon. Salary £120 per annum, with board and residence.

BARNSTAPLE, NORTH DEVON INFIRMARY.—House Surgeon. Salary £100 per annum, with board, residence, and washing.

BELGRAVE HOSPITAL FOR CHILDREN, Clapham-road, S.W.—House Surgeon and House Physician for six months. Salary at rate of £75 per annum, each with board, residence, and washing.

BIRKENHEAD BOROUGH HOSPITAL.—Junior House Surgeon. Salary £100 per annum, with board and laundry.

BIRMINGHAM CITY ASYLUM, Rubery-hill.—Junior Assistant Medical Officer. Salary £200 per annum, with apartments, board, laundry, &c.

BIRMINGHAM CITY EDUCATION COMMITTEE.—Temporary School Medical Officer. Salary at rate of £500 per annum. Also Assistant School Medical Officer. Salary £300 per annum.

BIRMINGHAM, CITY FEVER HOSPITAL, Little Bromwich.—Assistant Medical Officer. Salary £200 per annum, with board, residence, and laundry.

BIRMINGHAM AND MIDLAND HOSPITAL FOR SKIN AND URINARY DISEASES.—Clinical Assistant for three months, afternoon attendance only. Salary at rate of 52 guineas per annum.

BIRMINGHAM UNION.—DUDLEY-ROAD INFIRMARY: First Assistant Medical Officer, Second Assistant Medical Officer, and Fourth Assistant Medical Officer. Salaries at rate of £225, £180, and £160 per annum respectively. HANDSWORTH INFIRMARY AND COTTAGE HOMES: Assistant Medical Officer. Salary at rate of £200 per annum. SELLY OAK INFIRMARY: Assistant Medical Officer. Salary at rate of £180 per annum. Apartments, rations, laundry, and attendance in each case.

BIRMINGHAM, YARDLEY-ROAD SANATORIUM AND ANTI-TUBERCULOSIS CENTRE.—Third Assistant Medical Officer. Salary £200 per annum, with board and residence.

BODMIN, CORNWALL COUNTY ASYLUM.—Junior Assistant Medical Officer. Salary £225 per annum, with quarters, board, laundry, and attendance.

BURNLEY, VICTORIA HOSPITAL.—Second House Surgeon. Salary £135 per annum, with residence, board, and washing.

BUXTON, DERBYSHIRE, DEVONSHIRE HOSPITAL.—Assistant House Physician for six months. Salary £100 per annum, with apartments, board, and laundry.

CAMBERWELL INFIRMARY.—Assistant Medical Officer. Salary £190 per annum, with apartments, board, and washing.

CANTERBURY, KENT COUNTY ASYLUM, Chartham.—Junior Assistant Third Medical Officer, unmarried. Salary £250 per annum, with apartments, lighting, heating, attendance, laundry, &c.

CARDIFF, KING EDWARD VII.'S HOSPITAL.—House Surgeon for Ophthalmic and Ear, Nose, and Throat Departments. Salary £100 per annum, with board, residence, and laundry. Also Two House Surgeons for six months. Salary at rate of £100 per annum, with board, residence, and laundry.

CARSHALTON, SURREY, QUEEN MARY'S HOSPITAL FOR CHILDREN.—Assistant Medical Officers. Salary at rate of £250 per annum, with board, lodging, and washing.

CHELTENHAM GENERAL HOSPITAL.—House Physician and House Surgeon, unmarried. Salary £100 per annum each, with board, lodging, and washing.

CITY OF LONDON HOSPITAL FOR DISEASES OF THE CHEST, Victoria Park, E.—House Physician for six months. Salary at rate of £75 per annum, with board, residence, and washing.

COLCHESTER, ESSEX COUNTY HOSPITAL.—House Surgeon. Salary £100 per annum, with board, residence, and washing.

DERBY COUNTY ASYLUM, Mickleover, Derby.—Junior Assistant Medical Officer. Salary £200 per annum, with board, lodging, and washing.

DERBY COUNTY BOROUGH EDUCATION COMMITTEE.—Temporary School Medical Officer. Salary £300 per annum.

DERBY, DERBYSHIRE EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary £300 per annum.

DERBY, DERBYSHIRE HOSPITAL FOR SICK CHILDREN.—Female Resident Medical Officer. Salary £80 per annum.

DORSET COUNTY COUNCIL.—Assistant County Medical Officer of Health. Salary at rate of £250 per annum.

DUNDEE ROYAL INFIRMARY.—Three Resident Medical Officers. Salary at rate of £40 per annum, with board, lodging, and laundry.

DURHAM COUNTY COUNCIL.—Assistant Tuberculosis Medical Officer. Salary £360 per annum.

EDMONTON INFIRMARY.—Second Assistant Medical Officer, unmarried. Salary £140 per annum, with residential allowances.

EVELINA HOSPITAL FOR SICK CHILDREN, Southwark, S.E.—House Surgeon for six months and House Physician for four months. Salaries at rate of £75 per annum, with board, residence, and washing. Also Clinical Assistants in Out-patient Departments.

GRANGE-OVER-SANDS, WESTMORLAND SANATORIUM, Meathop.—Senior Assistant Medical Officer. Salary £200 per annum, with apartments, board, and laundry.

GREAT YARMOUTH HOSPITAL.—House Surgeon, unmarried. Salary £140 per annum, with board, lodging, and washing.

HALIFAX ROYAL INFIRMARY.—Second and Third House Surgeons, both unmarried. Salaries £120 and £100 per annum respectively, with residence, board, and washing.

HAMPSHIRE COUNTY COUNCIL.—Three Assistant County Medical Officers of Health. Salary £300 per annum.

HULL ROYAL INFIRMARY.—Senior House Surgeon, unmarried. Salary £150 per annum, with board and apartments. Also Assistant House Surgeon. Salary at rate of £100 per annum, with board and lodging.

HULL, VICTORIA CHILDREN'S HOSPITAL, Park-street.—Female Resident House Surgeon. Salary £60 per annum, with board and laundry.

ILFORD URBAN DISTRICT COUNCIL.—Medical Officer of Health, School Medical Officer, and Medical Superintendent of the Infectious Diseases Hospital. Salary £525 per annum.

JOHANNESBURG, SOUTH AFRICAN INSTITUTE FOR MEDICAL RESEARCH.—Superintendent of Routine Division. Salary £700 per annum.

KING EDWARD MEMORIAL HOSPITAL, Ealing, W.—Resident Medical Officer for six months. Salary at rate of £80 per annum, with board, residence, and laundry.

KING'S LYNN, WEST NORFOLK AND LYNN HOSPITAL.—House Surgeon. Salary £150 per annum, with residence, board, and washing.

LEEDS PUBLIC DISPENSARY.—Two Resident Medical Officers. Salaries £130 per annum, with board, residence, and laundry.

LIVERPOOL INFIRMARY FOR CHILDREN.—Resident House Physician for six months. Salary £30, with board and lodging.

MAIDSTONE, KENT COUNTY ASYLUM.—Second Assistant Medical Officer, unmarried. Salary £280 per annum, with board, quarters, attendance, washing, &c.

MAIDSTONE, WEST KENT GENERAL HOSPITAL.—Assistant House Surgeon, unmarried. Salary £100 per annum, with board, lodging, &c.

MANCHESTER COUNTY ASYLUM, Prestwich.—Assistant Medical Officer, unmarried. Salary £250 per annum, with board, apartments, attendance, and washing.

MANCHESTER, HULME DISPENSARY, Dale-street, Stretford-road.—House Surgeon. Salary £180 per annum, with apartments, attendance, coal, and gas.

MANCHESTER NORTHERN HOSPITAL FOR WOMEN AND CHILDREN, Park-place, Cheetham Hill-road.—House Surgeon. Salary £120 per annum, with apartments and board.

MANCHESTER ROYAL EYE HOSPITAL.—Junior House Surgeon. Salary £80 per annum, with residence, board, and washing.

MANCHESTER ROYAL INFIRMARY.—Medical Officer for Out-Patients and Accidents, and Assistant Medical Officer for Convalescent Hospital, Cheadle, both for six months. Salaries at rate of £100 and £80 per annum respectively. Board and residence in each case. Also Three House Physicians for six months. Salary £20, with board and residence. Also Four Junior House Surgeons. Board and residence provided.

MERTHYR TYDFIL COUNTY BOROUGH.—Assistant School Medical Officer. Salary £300 per annum.

MIDDLESBROUGH, NORTH RIDING INFIRMARY.—Senior House Surgeon for six months. Salary at rate of £100 per annum, with board, apartments, and laundry.

MIDDLESEX COUNTY ASYLUM, Napsbury, near St. Albans.—Temporary Assistant Medical Officer. Salary 5 guineas per week, with board, lodging, washing, and attendance.

MILLER GENERAL HOSPITAL FOR SOUTH-EAST LONDON, Greenwich-road, S.E.—Resident Medical Officer and Junior House Surgeon. Salaries £150 and £85 per annum respectively, each with board, residence, and laundry.

NEWPORT (MON.). ROYAL GWENT HOSPITAL.—Resident Medical Officer. Salary for first six months at rate of £100 per annum, second six months £125, and third six months £150, with board, residence, and laundry.

NORTHAMPTONSHIRE COUNTY COUNCIL EDUCATION COMMITTEE.—Temporary Assistant School Medical Officer. Salary £25 per month.

NORWICH, NORFOLK AND NORWICH HOSPITAL.—House Physician. Salary £80 per annum. Also Casualty House Surgeon for six months. Salary at rate of £60 per annum, with board, lodging, and washing in each case.

NORWICH, CITY OF.—Assistant Medical Officer of Health. Salary £200 per annum, with rooms, board, &c. Also Assistant School Medical Officer. Salary £300 per annum.

NOTTINGHAM CITY ASYLUM.—Junior Assistant Medical Officer, unmarried. Salary £200 per annum, with board, apartments, and laundry.

NOTTINGHAM GENERAL DISPENSARY.—Assistant Resident Surgeon, unmarried. Salary £180 per annum, with apartments (not board), attendance, light, and fuel.

NOTTINGHAM GENERAL HOSPITAL.—Senior House Physician. Salary £120 per annum, with board, residence, and laundry.

PLAISTOW FEVER HOSPITAL, London, E.—Female Second Assistant Medical Officer for temporary duty. Salary at rate of £100 per annum, with rooms and all found.

PRESTON ROYAL INFIRMARY.—Resident Medical and Surgical Officer. Also Assistant Resident Medical and Surgical Officer. Salaries £150 and £120 per annum respectively, with board, residence, and laundry.

RAMSGATE GENERAL HOSPITAL AND DISPENSARY.—Resident House Surgeon, unmarried. Salary £100 per annum, with board, residence, and laundry.

ROTHERHAM HOSPITAL.—Assistant House Surgeon. Salary £110 per annum, with board, lodging, and washing.

ROYAL EAR HOSPITAL, Dean-street, Soho, W.—Honorary Radiographer.

ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C.—Senior House Surgeon. Salary at rate of £100 per annum, with board and residence.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, S.E.—Junior Resident Medical Officer. Salary at rate of £70 per annum, with board and washing.

ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN, Plaistow, E.—Assistant Resident Medical Officer. Salary at rate of £100 per annum, with board, residence, and laundry.

ST. PANCRAS.—Senior Assistant Medical Superintendent of South Infirmary, Cook's-terrace, Pancras-road, and Senior Assistant Medical Officer of the house adjacent. Salary at rate of £175 per annum, with board and apartments.

ST. PETER'S HOSPITAL FOR STONE, &c., Henrietta-street, Covent Garden, W.C.—Junior House Surgeon for six months. Salary at rate of £75 per annum, with board, lodging, and washing.

SALFORD ROYAL HOSPITAL.—Resident Surgical Officer. Salary at rate of £120 per annum. Also Casualty House Surgeon. Salary at rate of £100 per annum. Both for six months, with board and residence.

SALISBURY (GENERAL) INFIRMARY.—Assistant House Surgeon, unmarried. Salary £75 per annum, with apartments, board, lodging, and washing.

SAMARITAN FREE HOSPITAL FOR WOMEN, Marylebone-road, N.W.—Anæsthetist. Salary £15 per annum.

SCARBOROUGH HOSPITAL AND DISPENSARY.—Senior and Junior House Surgeons. Salaries £100 and £80 per annum respectively, with board, residence, &c.

SHEFFIELD CHILDREN'S HOSPITAL.—House Surgeon. Salary £150 per annum, with board and residence. Also House Surgeon at East End Hospital (Out-patient Department only). Salary £120 per annum, with board and residence.

SHREWSBURY, ROYAL SALOP INFIRMARY.—House Physician, unmarried. Salary at rate of £110 per annum, with board and apartments.

SOUTHAMPTON FREE EYE HOSPITAL.—House Surgeon. Salary £100 per annum, with board, lodging, and laundry.

SOUTHAMPTON, ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—House Physician. Salary £120 per annum, with rooms, board, and washing.

SOUTH SHIELDS, INGHAM INFIRMARY AND SOUTH SHIELDS AND WESTOE DISPENSARY.—Junior House Surgeon. Salary £115 per annum, with residence, board, and washing.

SUNDERLAND ROYAL INFIRMARY.—House Physician. Salary £120 per annum, with board, residence, and laundry.

SWANSEA GENERAL AND EYE HOSPITAL.—House Surgeon. Salary £125 per annum, with board, washing, and attendance.

TAUNTON, TAUNTON AND SOMERSET HOSPITAL.—House Surgeon and Assistant House Surgeon. Salaries £120 and £80 per annum respectively, with board, lodging, and laundry in each case.

TRURO, ROYAL CORNWALL INFIRMARY.—House Surgeon, unmarried. Salary £100 per annum, with rooms, board, and washing.

TUNBRIDGE WELLS GENERAL HOSPITAL.—House Physician, unmarried. Salary £100 per annum, with board, residence, &c.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.—House Surgeon for six months. Salary £40, with board, lodging, and washing.

WALSALL AND DISTRICT HOSPITAL.—Senior House Surgeon. Salary £150 per annum, with board, residence, and laundry.

WARRINGTON INFIRMARY AND DISPENSARY.—Junior House Surgeon. Salary at rate of £120 per annum, with board, apartments, and laundry.

WARRINGTON, LANCASHIRE COUNTY ASYLUM, Winwick.—Assistant Medical Officer, unmarried. Salary £250 per annum, with board, apartments, attendance, and washing.

WEST BROMWICH AND DISTRICT HOSPITAL.—Assistant Resident House Surgeon and Anæsthetist, unmarried. Salary £100 per annum, with board, residence, and washing.

WEST HAM AND EASTERN GENERAL HOSPITAL, Stratford, E.—Senior House Physician. Salary £120 per annum. Also Junior House Physician and Junior House Surgeon. Salary £100 per annum. Board, residence, and washing provided in each case.

WEST HAM UNION INFIRMARY, Whipps Cross-road, Leytonstone, N.E.—Female Medical Officer. Salary £160 per annum, with usual residential allowances.

WESTMINSTER UNION INFIRMARY, Fulham-road, S.W.—Second Assistant Medical Officer. Salary £160 per annum, with board, residence, and washing. Also Third Assistant Medical Officer. Salary £140 per annum, with board, residence, and washing.

WHITEHAVEN AND WEST CUMBERLAND INFIRMARY.—Resident House Surgeon. Salary £150 per annum, with board, washing, and attendance.

WINSLEY SANATORIUM FOR CONSUMPTION, near Bath.—Senior Resident Medical Officer, unmarried. Salary £300 per annum, with board, residence, and laundry. Also Assistant Resident Medical Officer, unmarried. Salary £150 per annum, with board, residence, and laundry.

WOLVERHAMPTON AND STAFFORDSHIRE GENERAL HOSPITAL.—Resident Medical Officer for six months. Salary at rate of £125 per annum, with board, rooms, and laundry.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Beith, in the county of Ayr; and at Hucknall Torkard, in the county of Notts.

Births, Marriages, and Deaths.

BIRTHS.

BRYDEN.—On Sept. 5th, at Riswitha Hall, Gainsborough, the wife of Captain R. A. Bryden, R.A.M.C., of a daughter.

FOSTER-BARHAM.—On August 30th, at Horton-lane, Epsom, the wife of G. Foster-Barham, M.D. Cantab., of a daughter.

HOLFORD.—On Sept. 9th, at Burton-on-Trent, the wife of Chris. Tredwell Holford, F.R.C.S. Edin., of a daughter.

MONTESOLE.—On Sept. 11th, at Cascade-avenue, Muswell Hill, N., to Dr. and Mrs. M. H. Montesole, a daughter.

TAYLOR.—On Sept. 12th, at Campden House Court, W., the wife of C. H. S. Taylor, M.D. Cantab., of a daughter.

WILSON.—On Sept. 13th, at College-crescent, Swiss Cottage, N.W., the wife of J. Clark Wilson, M.D. Edin., M.R.C.P. Lond., of a daughter.

MARRIAGES.

BARKER—DRAKE.—On Sept. 15th, Francis James Barker, M.A., M.B., C.M. Glasg., to May, youngest daughter of the late James Drake, Esq., J.P., of Yorkshire.

BAYLEY—COLMAN.—On Sept. 12th, at Holy Trinity Church, Cookham, Eric Bayley, M.D. Lond., F.R.C.S. Eng., to Margaret Colman, elder daughter of Mrs. Charles Hunter, of Cookham, Berks.

NABARRO—WEBSTER.—On Sept. 9th, at North Walsham, David Nunes Nabarro, M.D. Lond., to Florence Nora, second daughter of Nathan Bell Webster, of North Walsham.

WORTH—KNIGHT-ROBINSON.—On Sept. 9th, at St. Saviour's Church, St. George's-square, S.W., Dr. Reginald Worth to Marion Catherine, youngest daughter of the late Godfrey Knight-Robinson and of Mrs. Knight-Robinson, of Woking.

DEATHS.

CLARK.—On Sept. 9th, at St. George's-road, S.W., Lieutenant-Colonel James Edward Clark, late Brigade-Surgeon, A.M.S., aged 77 years.

FEATON-FISHER.—On Sept. 12th, at Park-road, Wimbledon, William Featon-Fisher, L.R.C.P. Lond., M.R.C.S. Eng., in his 52nd year.

HAYES.—On Sept. 8th, at Fairfield Lodge, Farnham, Surrey, Surgeon-Major William Henry Hayes, late I.M.S. and Deputy Commissioner of Singhboom, Bengal, India, aged 81 years.

HOWSE.—On Sept. 15th, at The Tower House, Cudham, Kent, Sir Henry Greenway Howse, M.S., D.Sc., F.R.C.S., Consulting Surgeon, Guy's Hospital, late President of the Royal College of Surgeons of England, in his 73rd year. Funeral at St. Luke's Cemetery, Bromley Common, Saturday, the 19th, at 11 A.M. Friends please accept this, the only intimation.

MAYBURY.—On Sept. 8th, at Almeida-street, Islington, N., Horace Mansell Maybury, M.D.R.U.I., in his 67th year.

TANNER.—On Sept. 8th, at Glenmore-road, N.W., John Tanner, M.D. St. And., in his 79th year.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

During the continuance of the war the size of THE LANCET *will be curtailed. This has been necessitated primarily by the difficulty in ensuring an adequate supply of paper, but the contributions of most of our correspondents on the continent have failed, and will fail, to reach us. Many special features of* THE LANCET *have had to be sacrificed for the time, and while we ask the indulgence of our readers for this, we promise to restore them at the earliest possible opportunity.*

CLIMATE OF ST. THOMÉ AND PRINCIPÉ.

REPORTING on these Portuguese islands, situate in the Gulf of Guinea, with an area of 442 square miles and a population of 45,000, the British Consular representative writes that he met an Englishman at St. Thomé who stated that he was induced to sign a three years' agreement for employment there by being assured he was being sent to a healthy climate. One would have thought (adds the Consul) that all the world knew how unhealthy the West Coast of Africa and the islands in the Gulf of Guinea are, but the writer has met several men who signed agreements without the least knowledge of the conditions of life they would have to face. The higher situated plantations in the mountains of St. Thomé and Principé are not particularly trying for an Englishman, but the cities and low-lying lands experience a climate like that of a Turkish bath, and Englishmen who have never been in this region before would do well to make full inquiries as to the place they are going to before entering into agreements for long periods. Employers on their part could do much to minimise the cases of fever among their employees if they would advise them before leaving the United Kingdom as to the primary importance of observing certain definite rules of life on the West Coast. Although the old west-coaster, who has invalided home or buried 95 per cent. of the men who came out with him, but who happens to have been fever-proof himself, is apt to scoff at modern precautions against fever, impartial observers have noticed that, generally speaking, those people retain their health who (1) always wear a sun helmet by day, (2) never sleep without a mosquito net, and (3) take five grains of quinine regularly every morning. As the violation of these rules almost invariably brings swift and sure punishment, it is astounding that they should be so flagrantly disregarded. The consul thinks nobody should be sent out to West Africa without being recommended to read Sir Ronald Ross's book on "The Prevention of Malarial Fever."

New Government hospitals have been completed both at St. Thomé and Principé, but the one at St. Thomé lacks an efficient water-supply and that at Principé is admittedly too small.

The campaign against the tsetse-fly appears to have been continued with vigour, and hopes are entertained that the year 1914 may see the complete extermination of the fly in the Island of Principé. (The usual English names of these islands are St. Thomas and Prince's Island.)

A QUOTATION IN SEARCH OF A FATHER.

To the Editor of THE LANCET.

SIR,—Could any of your readers who are learned in mycology tell me where the following lines are to be found, and who wrote them:—

> Naturae fetus mirare, sed aufuge fungos;
> Namque a fungendo funere nomen habent.

I have a dim recollection of having read or heard that they were inscribed over the door of a botanical library or museum (or section thereof) somewhere, and that somewhere, Vienna. Non cuivis homini—I have never been to Vienna, and the idea of such an inscription seems improbable, though delightful. But I should be grateful for information from any quarter.

I am, Sir, yours faithfully,

EDWIN A. EADE.

United University Club, Pall Mall East, Sept. 15th, 1914.

THE DOCTORS' WIVES ASSOCIATION.

MEDICAL women and married medical men may be glad to have their attention drawn to a coöperative scheme for economical shopping which has been founded by our enterprising contemporary *The Hospital*, under the title of the Doctors' Wives Association. Full information may be obtained on application to the secretary of this association, 28 and 29, Southampton-street, Strand, London, W.C.

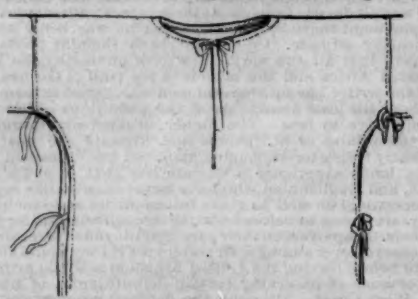
STEVENS' "CONSUMPTION CURE" AGAIN.

WE thought that after the failure of the action, Stevens *v.* British Medical Association, little more would be heard of Stevens' "Consumption Cure"; but apparently the business is still being carried on, this time under the shelter of the Red Cross flag. The following advertisement has lately appeared in the agony column of *The Times*:—

WAR.—CONSUMPTION.—Necessitous dependents of men on Active Service may have STEVENS' CONSUMPTION CURE, with the personal attention of Mr. Stevens, FREE of CHARGE.—206, Worple-road, Wimbledon.

A SHIRT OR BEDGOWN FOR THE HELPLESS.

WE have inspected a nightshirt or bedgown invented by Mrs. Gunthorpe, formerly a nurse at the Middlesex Hospital, which should be of service for the helpless sick or wounded. It is very easily cut out, all from one piece, and has a circular hole for the head, while the front and back are divided on each side, the slit running under the armpit and down the inside of each sleeve, and where it is desirable and possible to convert it into a complete shirt these slits are tied together with the tapes affixed.



When it is not desirable that the shirt should reach the lumbar region the back part can be folded under the shoulders, the extreme end forming a hood if so desired. The garment is reversible and affords plenty of room, so that a cradle can be placed under it. It can be put on and removed without moving the patient. Pyjamas are also made on the same principle. The garments are made by Madame Gulley, 291, Regent-street, or the pattern can be obtained, for the shirt can be made by any one.

GAMBIA HEALTH REPORT.

ACCORDING to the Blue-book for the year 1913 the estimated present population of the Colony and Protectorate of Gambia is about 153,000. In Bathurst, the capital, the death-rate—21·42 per 1000—was the lowest recorded during the last ten years. The reduced number of deaths may be attributed to some extent to the late onset of the rains and the exceptionally low rainfall. This resulted in freeing the town from the accumulation of standing water in low-lying places. Sanitary improvements and increased vigilance on the part of the sanitary authorities also helped. An endeavour was made to reduce the infantile mortality. A class of native women was formed, and a medical officer delivered simple lectures, with illustrations, on elementary dressing and midwifery. The class unfortunately was not successful owing to the members failing to attend the lectures on the ground that they had work to do and duties to perform in the Protectorate. Mr. E. A. Chartres, the senior medical officer, continued his endeavours by publishing a pamphlet dealing with the precautions to be taken regarding confinements and the rearing of infants. The number of Europeans residing in the Colony and Protectorate during the year was 173. There were 1539 vaccinations performed at Bathurst and 2480 in the Protectorate during the year. In the Protectorate, where the Travelling Commissioners are guided by special sanitary instructions, prizes are given to the cleanest village in each province. An improvement is to be found as regards sanitation in some villages, but it will be a great number of years before the subject is adequately dealt with by a people, the majority of whom are not great believers in hygiene. The Board of Health maintained its crusade against mosquitoes and did not relax its efforts to prosecute the occupiers of insanitary premises. The climate of Gambia during some months of the dry season, which lasts from November to May, is pleasant. During the remaining months, known as "the rains," the conditions are similar to those experienced on the West Coast of Africa. Although these may not be quite so severe, they are felt to be more trying owing to the greater contrast between the dry and wet periods than is the case elsewhere. During the year the highest shade temperature recorded in Bathurst was 104° F. and the lowest 57°. The rainfall was 23·68 inches, as compared with 33·99 inches in 1912. There are two hospitals, one of which is at Bathurst and the other at MacCarthy Island. In the former accommodation is found for 25 male and 17 female patients. During the year 554 in-patients and 8134 out-patients were treated, and there were 62 deaths. Four rooms are provided in addition for cases requiring isolation. The MacCarthy Island Hospital is in charge of a European medical officer from October to June. During the remainder of the year, when there is only a small population on the island, a native dispenser is in charge. There is one ward for European and three wards for native patients. Thirty-four in-patients and 1314 out-patients were treated during the year. A contagious diseases hospital, situated about two miles from Bathurst, is also maintained. There was no epidemic during the year in the colony, but small-pox was prevalent in a mild form in the Protectorate.

SOME FIRST-AID BOOKS.

Dr. Duncan Macartney's "First Aid in Accidents and Sudden Illnesses" (Glasgow: St. Andrew's Ambulance Association. 1914. Pp. 211) consists of two parts—viz., elementary instruction in anatomy and physiology and such emergency non-operative surgery as may be advantageously given in first aid by laymen. This section also contains some useful information concerning the removal of the sick and injured. In the chapter on drowning and suffocation a very useful section on rescue work in mining disasters, mainly from Mr. Kerr's "Coal Mining," has been added. In the two figures 42 and 43 on the reef knot on p. 72 it would be well to reverse one of the blocks so that the dark cord is on the same side of the picture in both cases. The blocks as they are might confuse one not already familiar with the subject.—Major R. J. Blackham, C.I.E., has prepared a useful little "Indian Catechism of First Aid" (Simla: The St. John Ambulance Association, Indian Branch. 1914. Pp. 94. Price 6 annas), so that in the absence of skilled assistance, which is rare in India, the first aid pupils may get a friend to test their knowledge for them by catechising them. A companion book, "The Indian Catechism of Home Nursing," also by Major Blackham (Calcutta: Thacker, Spink, and Co. 1914), is intended to assist the amateur nurse in the same difficulty. Both are likely to prove useful.

CENTIGRADE AND FAHRENHEIT.

To the Editor of THE LANCET.

SIR,—Referring to the letter from "F." in your issue of August 8th under the above heading a much simpler way of converting degrees Centigrade into degrees Fahrenheit occurred to me many years ago, and I have brought it under the notice of not a few people who have much appreciated being able to carry out this operation without the need of pencil and paper. All that is necessary is to take the degrees Centigrade, subtract therefrom 1/10th, double the remainder, and add 32, and the answer will be the exact temperature Fahrenheit, for instance:—

18·0° C.
1·8° C.
16·2
2
32·4
32·0
64·4° F.

This may not be ingenious, but it is decidedly simple and quite accurate.

I am, Sir, yours faithfully,
Manchester, August 31st, 1914. WILLIAM KIRKBY.

*** In THE LANCET of Dec. 3rd, 1910, p. 1662, our industrious correspondent, "F.," published a method practically the same as Mr. Kirkby's.—ED. L.

THE SUPPLY OF ACETYL-SALICYLIC ACID.

Messrs. Arthur H. Cox and Co., Limited, of Brighton, have forwarded to us specimens of acetyl-salicylic acid tablets which they call "coxpyrin." A supply of the drug was secured from the neutral country of Switzerland, but arrangements are being made for the manufacture of these tablets from British made acetyl-salicylic acid.

Enquirer.—The K.H.P. in the title of Sir Arthur William May, K.C.B., K.H.P., R.N., whose promotion to be Knight of Grace in the Order of the Hospital of St. John of Jerusalem in England, was announced in our columns on Sept. 5th, signifies honorary physician to the King. K.H.S. signifies honorary surgeon to the King. These abbreviations are not amongst those given in the Medical Directory and some other usual works of reference.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—10 A.M., Dr. Simson: Diseases of Women. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. T. Gray: Operations. Dr. Pritchard: Bacterial Therapy Department. Mr. B. Harman and Mr. Gibb: Diseases of the Eye.

TUESDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Fernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Souttar: Operations. Dr. Simson: Diseases of Women. Mr. Gibb: Diseases of the Eye.

THURSDAY.—9 A.M., Dr. Bernstein: Bacterial Therapy Department. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. T. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Davis: Diseases of the Throat, Nose, and Ear. Dr. Fernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Souttar: Operations.

LONDON HOSPITAL MEDICAL COLLEGE (UNIVERSITY OF LONDON), London Hospital, Mile End-road, E.

Demonstrations in Clinical Medicine:—

MONDAY.—2.15 P.M., Dr. Wall: Pulmonary Tuberculosis. (Clinical Theatre.)

TUESDAY.—2.15 P.M., Dr. Grünbaum: Diseases of the Blood. (Clinical Theatre.)

WEDNESDAY.—2.15 P.M., Dr. Miller: Abdominal Diseases. (Out-patient Department.)

THURSDAY.—2.15 P.M., Dr. Thompson: Diseases of the Nervous System. (Clinical Theatre.)

FRIDAY.—2.15 P.M., Dr. L. Smith: Common Cardiac Conditions. (Clinical Theatre.)

SATURDAY.—10.15 A.M., Dr. Hutchison: Demonstrations on Selected Cases. (Wards or Clinical Theatre.)

Demonstrations on Selected Surgical Cases and on Cases of Interest in the Wards of the Hospital:—

MONDAY.—2 P.M., Mr. Milne.
TUESDAY.—2 P.M., Mr. Lett.
WEDNESDAY.—2 P.M., Mr. Howard.
THURSDAY.—2 P.M., Mr. Warren.
FRIDAY.—2 P.M., Mr. Walton.

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ROTUNDA HOSPITAL POST-GRADUATE COURSES, Dublin.

MONDAY.—10 A.M., Obstetrical Lecture: Antepartum Hæmorrhage (continued). 11 A.M., Examination of Patients and Minor Operations.

TUESDAY.—10 A.M., Major Operations.

WEDNESDAY.—10 A.M., Obstetrical Lecture: Postpartum Hæmorrhage. 11 A.M., Examination of Patients and Minor Operations.

THURSDAY.—10 A.M., Major Operations.

FRIDAY.—10 A.M., Gynæcological Lecture: Pelvic Infection (continued). 11 A.M., Examination of Patients and Minor Operations.

For further particulars of the above Lectures, &c., see Advertisement Pages.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

THE INDEX TO THE LANCET.

THE Index and Title-page to Vol. I. of 1914, which was completed with the issue of June 27th, were given in THE LANCET of July 4th.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1914 are now ready. Bound in cloth, gilt lettered, price 16*s.* carriage extra.

Cases for binding the half-year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 3*d.*

To be obtained on application to the Manager, accompanied by remittance.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

The rates of subscriptions, post free from THE LANCET Offices, have been reduced, and are now as follows:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 1 0	One Year	£1 5 0
Six Months	0 12 6	Six Months	0 14 0
Three Months	0 6 6	Three Months	0 7 0

(The rate for the United Kingdom will apply also to Medical Subordinates in India whose rates of pay, including allowances, is less than Rs.50 per month.)

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied.

SOLE AGENTS FOR AMERICA—MESSRS. WILLIAM WOOD AND CO., 51, Fifth Avenue, New York, U.S.A.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Sept. 16th, 1914.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks.
Sept. 10	29·88	SSE.	...	118	72	64	63	66	Cloudy
,, 11	29·84	S.W.	0·32	86	65	60	60	62	Raining
,, 12	29·89	W.	0·13	98	61	51	52	57	Fine
,, 13	29·85	N.W.	0·14	105	63	50	53	54	Fine
,, 14	29·63	S.W.	...	114	71	52	62	63	Overcast
,, 15	29·87	W.	...	109	64	51	51	56	Fine
,, 16	29·95	S.W.	...	108	66	51	53	56	Cloudy

The following magazines, journals, &c., have been received:—Bulletin of the Johns Hopkins Hospital, Canadian Practitioner and Review, Pediatrics, Guy's Hospital Gazette, Public Health, The Child, Tropical Diseases Bulletin, Midland Medical Journal, Annali di Medicina Navale e Coloniale, American Journal of Medical Sciences, Maryland Medical Journal, Surgery, Gynecology and Obstetrics, South African Medical Record, Annales de Medicina e Chirurgia, Archives of the Roentgen Ray, Revista de a Sociedad Médica Argentina, Archives of Internal Medicine.

INDEX

MEDICAL AND OTHER BOOKS AND PUBLICATIONS

BAILLIERE, TINDALL & COX:—
Bigg ..... Indigestion, Constipation—Liver Disorder 6
Clarke, E. .. Errors of Accommodation and Refraction of the Eye ..... Cover 1
Goulston .. Cane Sugar and Heart Disease..... Cover 1
Hayes ..... Intensive Treatment of Syphilis and Locomotor Ataxia by Aachen Methods ..... Cover 1
Thorne .... Nachaim Treatment of Diseases of the Heart and Circulation in England ..... Cover 1
Younger .. Insanity in Everyday Practice .... Cover 1

BALE, SONS & DANIELSSON:—
Hawthorne. Studies in Clinical Medicine .... Cover 1
Moullin .... When to Operate in Inflammation of the Appendix.... Cover 1

CASSELL & CO.:—
Morris, Sir M..... Diseases of the Skin 6

CASSELL & CO.—(Continued).
Walker .... Surgical Diseases and Injuries of Genito-Urinary Organs ..... Cover 1

CHURCHILL, J. & A.:—
Birnbaum & Blacker .. Malformations and Congenital Diseases of the Fœtus 3
Brown .... Essays and Addresses 3
Chavasse .. Advice to a Mother .. 3
" .. Advice to a Wife 3
Craig ..... Psychological Medicine 3
Fenwick .. Urinary Tuberculosis 1
Hardwicke. Sight-Testing Made Easy 3
Harridge.. Ophthalmoscope 3
" .. Refraction of the Eye 3
Herwood .. Plant Life in the British Isles 3
Lang & Meyers .. German-English Dictionary of Medical Terms 3
Lee ..... The Microtomist's Vade-Mecum 3
Panton .... Clinical Pathology 3
Smith ..... Law for Medical Men. 3
" ..... Taylor's Medical Jurisprudence 3
" ..... Lectures on Medical Jurisprudence 3

CHURCHILL.—(Continued).
Taylor .... Operative Surgery .. 3
Tomes..... A Manual of Dental Anatomy 3

FROWDE AND HODDER & STOUGHTON:—
McCann .. Cancer of the Womb: its Symptoms, Diagnosis, Prognosis, & Treatment .. Cover 1
Lockwood.. Clinical Surgery..... 6
Waring .... Surgical Diseases of the Gall Bladder, Bile Ducts, & Liver. 6
" .... Manual of Operative Surgery 6

HILTON & CO.:—
Ghosh ..... Materia Medica 6

LEWIS:—
Moullin .... Enlargement of the Prostate .... Cover 1
" .... The Biology of Tumours .... Cover 1

LONGMANS, GREEN & CO.:—
Hare ..... Food Factor in Disease ..... Cover 1

MACMILLAN & CO.:—
Ballance .. Cerebral Decompression in Ordinary Practice 6

MEDICAL PUBLISHING CO.:—
Lane, Sir A..... Operative Treatment of Fractures. Cover 1

MERRET & CO.:—
Romer & Cressy .. Bonesetting and the Treatment of Painful Joints.... Cover 1

SAUNDERS COMPANY:—
Bryan's Principles of Surgery ..... Cover 1
Bryan ..... Principles of Surgery 5
Da Costa's Modern Surgery Cover 1
Da Costa .. Modern Surgery 5

THE LANCET:—
The Territorial Medical Service .. 6

WRIGHT & SONS (BRISTOL):—
Owen ..... Appendicitis: A Plea for Immediate Operation 6
Pappenheim Clinical Examination of the Blood..... 6
Pye's Surgical Handicraft.. Cover 1

MEDICAL LIBRARIES, &c.:—
Behnke—
Stammering 6
Kelley—
Stammering 6
Matthews Bros.—
Wood: Application of Trusses 6

OFFICIAL AND GENERAL ANNOUNCEMENTS

APPOINTMENTS VACANT:—
Belgrave Hospital for Children, Clapham-road 48
Birmingham City Asylum, Rubery-hill 49
Birmingham Union—Dudley-road Infirmary 50
Birmingham Union—Erdington Infirmary and Cottage Homes.. 50
Birmingham Union—Selly Oak Infirmary 50
Birmingham and Midland Hospital for Skin and Urinary Diseases .. 47
Borough Hospital, Birkenhead.... 48
Cheltenham General Hospital 49
Children's Hospital, Sheffield 50
City of Birmingham Education Committee 51
City Fever Hospital, Little Bromwich 48
City of London Hosp. for Diseases of the Chest 50
City of Norwich 51
City of Westminster Union Infirmary 52
County Asylum, Prestwich, Manchester 49
County Borough of Derby Education Committee 50
County Borough of Merthyr Tydfil Education Committee 50
Cornwall County Asylum, Bodmin 47
Derby County Asylum, Mickleover, Derby 50
Derbyshire Education Committee. 48
Derbyshire Hos. for Sick Children, Derby 48
Devonshire Hospital, Buxton 48
District Infirmary and Children's Hospital, Ashton-under-Lyne .. 52
Dorset County Council 49
Dundee Royal Infirmary 52
Durham County Council 52
Edmonton Infirmary 54
Elder Dempster & Co., Liverpool. 52
Essex County Hospital, Colchester 50
Evelina Hospital for Sick Children 50
Free Eye Hospital, Southampton.. 50
General Hospital, Nottingham.... 47
Great Yarmouth Hospital 47
Hampshire County Council 49
Horton Infirmary, Banbury 47
Hull Royal Infirmary 48
Hull Victoria Children's Hospital. 50
Hulme Dispensary, Manchester .. 48
Ilford Urban District Council ... 48
Ingham Infirmary and South Shields and Westoe Dispensary 48
Kent County Asylum, Chartham.. 48
Kent County Asylum, Maidstone.. 48
King Edward Memorial Hospital, Ealing 48
King Edward VII.'s Hospital, Cardiff 51
Lancashire County Asylum, Winwick 47
Leeds Public Dispensary 48
Liverpool Infirmary for Children.. 50
Manchester Northern Hospital for Women and Children 48
Manchester Royal Eye Hospital .. 52
Manchester Royal Infirmary 49
Manchester Royal Infirmary Convalescent Hospital, Cheadle 49
Middlesex County Asylum, Napsbury 51

APPOINTMENTS—(Continued).
Miller General Hospital for South-East London 51
Norfolk and Norwich Hospital.... 54
North Devon Infirmary, Barnstaple 49
North Riding Infirmary, Middlesbrough 47
Northamptonshire County Council Education Committee 51
Nottingham City Asylum 52
Nottingham General Dispensary. 47
Parish of St. Giles, Camberwell, Infirmary 49
Plaistow Fever Hospital 48
Queen Mary's Hosp. for Children, Carshalton 50
Ramsgate General Hospital and Dispensary 51
Rotherham Hospital 47
Royal Cornwall Infirmary, Truro.. 47
Royal Ear Hospital, Soho 48
Royal Gwent Hospital 51
Royal Halifax Infirmary 47
Royal Infirmary, Preston 49
Royal Infirmary, Sunderland 50
Royal London Ophthalmic Hospital 47
Royal Salop Infirmary, Shrewsbury 47
Royal South Hants and Southampton Hospital 51
Royal Waterloo Hospital for Children and Women 48
St. Mary's Hospital for Women and Children, Plaistow .. 47
St. Pancras Infirmary, &c. 50
St. Peter's Hospital for Stone, Covent Garden 48
Salford Royal Hospital 52
Salisbury General Infirmary 47
Samaritan Free Hospital for Women, Marylebone road 49
Scarborough Hospital and Dispensary 48
S. African Institute for Medical Research, Johannesburg 49
Swansea General and Eye Hospital 49
Taunton and Somerset Hospital .. 52
Tunbridge Wells General Hospital 48
Victoria Hospital, Burnley 51
Victoria Hospital for Children, Chelsea 47
Walsall and District Hospital ... 47
Warrington Infirmary and Dispensary 49
West Bromwich and District Hos. 47
West Ham Union Infirmary 50
West Ham and Eastern General Hospital 47
West Kent General Hospital, Maidstone 48
West Norfolk and Lynn Hospital, King's Lynn 49
Westmorland Sanatorium, Meathop, Grange-over-Sands 49
Whitehaven and West Cumberland Infirmary 51
Winsley Sanatorium for Consumption 51
Wolverhampton and Staffordshire General Hospital 50
Yardley-road Sanatorium, Birmingham 48

ASSISTANCIES, MEDICAL 52

ASYLUMS, HOMES, &c.:—
Ashwood House, Kingswinford .. 40
Barnsley Hall, Bromsgrove..... 40
Barnwood House Hospital 41
Bishopstone House, Bedford..... 40
Bootham Park, York 40
Brunton House, Lancaster 48
Buntingford House Retreat, Buntingford 44
Camberwell House, Peckham-road 43
Cheadle Royal..... 41
City of London Mental Hospital, Stone..... 48
Clarence Lodge, Clapham Park .. 40
Colthurst House, Alderley Edge .. 40
Coppice, The, Nottingham 41
Dalrymple House, Rickmansworth 43
David Lewis Colony, Alderley Edge 43
Duff House, Banff..... 45
Farnham House, Dublin 43
Ghyllwoods 45
Grove House, Church Stretton.... 41
Grove, The, Catton, Norwich..... 41
Haslemere Nursing Home 48
Haydock Lodge, Newton-le-Willows 42
Heigham Hall, Norwich 41
Home for Epileptics, Maghull 48
Inverurie Sanatorium, Colinsburgh 44
Kingsdown House, Box..... 40
Littleton Hall, Brentwood 48
London Fever Hospital..... 41
Malling Place, Kent..... 41
Maryville, Dublin 45
Melbourne House, Leicester 45
Mendip Hills Sanatorium 45
Middleton Hall, Co. Durham..... 40
Moat House, Tamworth 41
Newlands House, Tooting Bec Common 40
Newmains Retreat, Lanarkshire.. 45
New Saughton Hall, Polton, Midlothian 42
Nordrach-on-Dee, Banchory 45
Northumberland House, Finsbury Park 43
Northwoods House, Winterbourne 42
Norwood Sanatorium, Ltd..... 43
No. 178, L.O., Strand 55
No. 238, L.O., Strand 46
Ochil Hills Sanatorium..... 44
Otto House, West Kensington 48
Peckham House..... 45
Pendyffryn Hall Sanatorium, Nordrach-in-Wales 44
Pinewood Sanatorium, Wokingham 44
Plympton House, Plympton 41
Portsmouth Corporation Mental Hospital 40
Poultney, Tarkastad, South Africa 46
Royal Earlswood Institution for Mental Defectives 42
St. Andrew's Hospital, Dollis Hill 48
St. Andrew's Hospital, Northampton 41
St. George's Retreat, Burgess Hill 40
St. Luke's Hospital for Mental Diseases 40
Springfield House Private Asylum, Bedford 40
Stretton House, Church Stretton. 41
The General Manager, Cravenstreet 48
The Grange, near Rotherham 41

ASYLUMS—(Continued).
Vale of Clwyd Sanatorium 44
Warneford Asylum, Oxford..... 40
Wye House, Buxton 41

FINANCIAL, &c.:—
Equitable Reversionary Interest Society 48

HEALTH RESORTS, BATHS, &c.:—
Alexandra Therapeutic Institute.. 48
Droitwich 48
Smedley's, Matlock 48

HOTELS:—
Hotel Windsor 45

HOUSE & ESTATE AGENTS:—
Bedford & Co., Wigmore-street.... 55
Elliott, Son & Boyton, Vere-street. 55
Lay Clark, Wimpole-street 55
CONSULTING-ROOMS:—
No. 177, L.O., Strand 53

LIFE & FIRE ASSURANCES, &c.:—
General Life Assurance Co. 39
National Provident Institution .. 39
Prudential 39

MASSAGE:—
London School of Massage 54

MEDICAL ACCOUNTANTS, &c.:—
Turner 55

MEDICAL AGENTS:—
Fieldhall, Limited 54
Johnson 54
Manchester Clerical, &c., Association..... 54
Medical Agency 54
Needes, Herbert 54
Needes, J. C. 54
Peacock & Hadley 54
Scholastic, Clerical, &c., Association 55
Turner 54

MEDICAL SCHOOLS:—
(LONDON.)
Charing Cross Hospital Medical School 33
London Homœopathic Hospital .. 37
London Hospital Medical College. 37
London Hospital Medical College and Dental School 35
London School of Clinical Medicine 37
Middlesex Hosp. Medical School.. 36
St. Bartholomew's Hospital and College 35
St. Mary's Hospital Medical School 37
St. Thomas's Hospital Medical School 35
University College Hosp. Medical School 37
University of London, King's College..... 35
West London Post-Graduate College..... 36
(PROVINCIAL, &c.)
Anderson College of Medicine, Glasgow 38
Edinburgh School of Medicine for Women 38
University of Leeds 38

For continuation of Index to Official and General Announcements, and Trade and Miscellaneous Advertisements, see pag. 4.